SOME RECENT DISCOVERIES AT NEMI, IN THE ROMAN CAMPAGNA.*

By J. Tavenor Perry [A.].

NOTICES which have lately appeared in the public journals have drawn attention to the exploration, once more being attempted, of the bed of the Lake of Nemi; and as the discoveries which have been made, both in the lake and on its shores, are already of considerable importance, and are likely to lead to further efforts, some account of what has been accomplished may be of interest to the members of the Institute.

No visitors to Rome neglect to spare at least a day to feast their eyes on the wonderful beauty of the Lake of Nemi; and to architects and engineers there is the further interest that through all its known history it has been the scene of great and important works, remarkable even among Roman constructions. The earliest of these is the great tunnel, or emissarium, nearly a mile in length, which is cut through the solid peperino, or occasional masses of basaltic lava, by which the waters of the lake were reduced to their present level, and which still carries off the surplus water. From its surface the great Temple of Jupiter on Monte Cavo can be seen, and on its shores the beautiful Artemisium, or Temple of Diana, was built. The last of these works, the main road from Albano to Genzano, built for Pius IX., is modern. It is carried across the valleys around Ariccia by viaducts, one of which consists of three tiers of arches rising to a height of 196 feet above the valley. Nibby, quoted by Burn in his *Rome and the Campagna* (p. 354), thus describes the lake:—"The situation of Nemi is picturesque, and "the view from it of the crater and of the lake, which resembles an enormous mirror spread "below, is magnificent. But, beyond the historical reminiscences of the Temple of Diana, "it presents nothing worth particular mention. The baronial castle near it has all the "appearance of a feudal fortress. It was built by the famous Colonna family, "once the lords of the estate, who also built the round tower or keep which sur-"mounts it. By ascending the side of the mountain which rises above it a splendid "panoramic view of the coast of Latium, and of the adjacent Rutulian and Volscian territory,

* The illustration at the head of this page is the reproduction of a photograph of a bronze ring and pile head from the Lake of Nemi, the name of which, and of the village on its margin, is derived from the great grove of Diana, whose Temple (wrote Burn in 1870) probably stood on the site of the present village—the doubt having been removed by the excavations of 1885, when the walls of the temple were found, according to Murray's *Handbook of Rome and its Environs* (p. 420), at the Giardino del Lago, one mile below Nemi to the north-west.

" may be enjoyed. The eye ranges along the whole coast-line of the Tyrrhenian Sea, from the " Circæan promontory to the mouths of the Tiber, and the situations of Antium, Ardea, " Lavinium, Laurentum, Ostia, and Porto " are clearly distinguishable, together with " many other points."

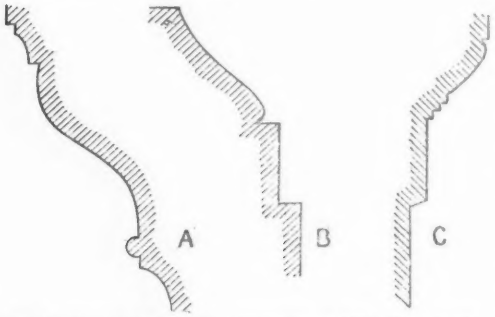

FIG. 1.—FRAGMENTS FROM THE ARTEMISIUM AT NEMI. From sketches made by Professor T. Hayter Lewis, F.S.A., in 1885.
A, supposed cornice. B, plinth. C, capital.

The position of the Temple of Diana Nemorensis, to which Nibby here refers, was for long unknown ; but the excavations below Nemi, made by Lord Savile ten years ago, have settled this point, and disclosed very considerable remains of ancient buildings. In the last (1894) edition of Murray's *Handbook of Rome and its Environs* (p. 420), a plan is given of the Temple and its surrounding walls, with particulars of the various remains laid bare by the excavations. The bronze statuettes of Diana and the many other valuable articles discovered on the site have been deposited in the Nottingham Castle Museum. Through some difficulty or dispute which arose relative to the ownership of the articles found, the excavations were discontinued and the earth filled in again, but fortunately not before they had been examined by Professor T. Hayter Lewis, who in 1885 made a plan of the buildings, with sections of some of the mouldings discovered, which, by his kindness, I am permitted to publish [fig. 1]. From these it will be seen that the building was of the Doric Order, and more Greek in its character than any other building so near to Rome. The buildings were erected on an artificial terrace of about 10 acres in extent, the Temple itself being about 80 feet by 50, raised on a base marked with the moulding B, which has a projection of 14½ inches. The moulding A, which is 14 inches deep, is assumed to be part of the cornice ; and the moulding C is part of a capital. In the retaining walls, which surrounded three sides of the terrace, were great niches 30 feet high and 15 feet wide built of opus incertum.

FIG. 2.—BRONZE MOORING RING, RECOVERED FROM THE LAKE OF NEMI.

It was long believed that one of the early Cæsars had erected a floating palace on the surface of the lake, and many attempts have been made to recover it ; but the conclusion at last arrived at is that the tradition was wrong, and that the palace, or whatever it was, was

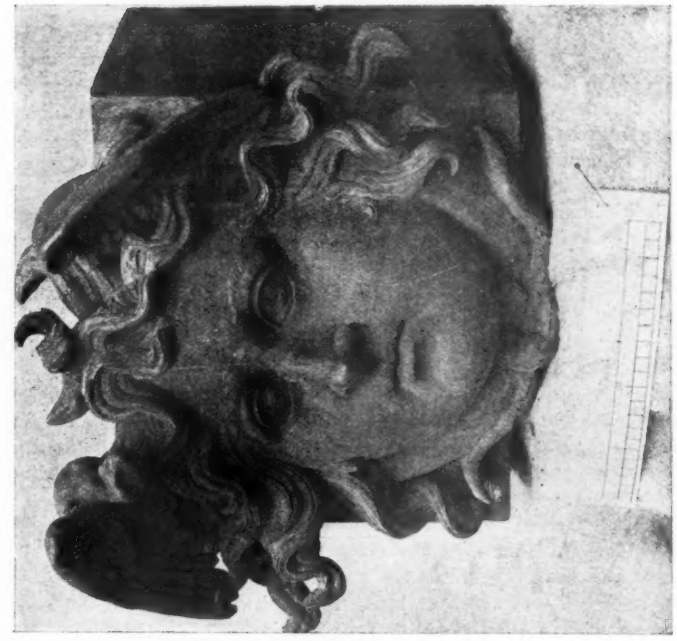

FIG. 4.—MEDUSA HEAD.

FIG. 3.—MOORING RING.

ANCIENT BRONZES RECOVERED FROM THE LAKE OF NEMI IN THE ROMAN CAMPAGNA.

REPRODUCED FROM PHOTOGRAPHS PRESENTED BY THE AUTHOR OF THE PAPER.

of the nature of a permanent structure raised upon piles. Nibby's account, as given by Burn in the latter's *Rome and the Campagna* (p. 354), will show how the case stood before the discoveries of the last few months were made. He says:—

> The story of the ship discovered at the bottom of this lake, and said by some authors to have belonged to the time of Tiberius, by others to that of Trajan, is well known. Biondo, Leon Battista Alberti, and particularly Francesco Marchi, a celebrated architect and military engineer of the sixteenth century, who went down into the lake himself, have spoken of it. Fresh investigations have been carried on of late, at which I was present, and saw and examined everything which was brought to the surface, and inquired of those who went down what they saw there. I consider myself in a position to assert that the pretended ship was nothing more than the wooden piles and timbers used in the foundations of a building. The beams are of fir and larch, and are joined by metal nails of various sizes. The pavement, or at least the lowest stratum of the remains, is formed of large tiles placed upon a kind of grating of iron, on which the name **CAISAR** in ancient letters is marked. Some of these tiles and nails and gratings are now kept in the Vatican Library.
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> The name CAISAR seems to explain the history of the building. For Suetonius, in his life of Julius Cæsar, as an illustration of the Dictator's extravagance, asserts that, after having built a villa on the Lake of Nemi at an enormous expense, he had the whole destroyed because it did not quite suit his taste. It is my belief that the pretended ship was nothing else than the piles and wooden framework upon which this villa was supported, and that after the upper part was destroyed the foundations under the water still remained, partly covered by the fragments of the demolished building above.

In Nibby's conclusion, that it was a permanent building, Burn concurs; and he advances, as an additional argument, the fact that the leaden pipes now preserved in the Kircherian Museum of the Collegio Romano were more likely to belong to a villa than to a ship. Such was the state of our knowledge of the lake buildings until a short time since, when diving operations were resumed, with a result which clearly shows that previous examinations had been very hurriedly or carelessly made; and that Nibby had but very imperfect data from which to draw his conclusions—that after all the ancient tradition was correct.

Being in the Cesarini Gardens at Genzano a short time since, I saw a small raft, moored out on the Nemi side, disturbing the placid surface of the lake; but I was then unable to ascertain why it was there. Returning to Rome I made some inquiries, which not only enabled me to get what I believe to be authentic information as to what has been done, and what it is further proposed to do, but to obtain the beautiful photographs printed with this communication [see figs. 2, 3, 4, and the headpiece].

The recent diving operations, which have so far been carried out by private enterprise, have resulted in proving the supposed villa to have been neither more nor less than the landing stage of the traditional galley, which had gradually subsided by decay beneath the water of the lake, and which has thus been preserved until now in a fairly perfect condition. It is of considerable extent, and lies about 60 feet below the surface, and can only be brought up to the land, piecemeal, after considerable damage. The matter is, I believe, under the consideration of the Italian Government. They have before them a proposal to employ some skilled engineers from Spezzia, who, by forming a coffer-dam around the stage, the extent and position of which have now been accurately determined, and by pumping out the water, will either raise it to the surface, or expose it so that it may be carefully examined and delineated by experts. The piles which support the stage are sheathed in copper and they were capped with bronze, having on the one face heads holding the rings in their mouths for the mooring ropes. These heads, of most beautiful workmanship, are perfectly preserved. Being easily moved, the heads have been brought to the surface, and prove clearly that they were provided for mooring ships or galleys to the stage; and that the tradition of the galley

is reasonable. The Medusa Head, of still more exquisite workmanship, may have been affixed to a prow, but I was unable to ascertain exactly the position in which it was found. The stage was laid with a marble pavement, consisting of large plaques of porphyry, with encircling pieces of white and green marbles and a quantity of glass mosaic. From the descriptions it would seem that the character of the pavement was that of opus alexandrinum.

It is also stated that the galley has been seen afresh, and the discovery of the use to which the permanent structure was devoted has clearly demonstrated that a movable palace or ship of some sort was intended to be placed on the lake. It is to be hoped that when the stage has been recovered, the galley may be at least looked for; but, even if found, the enormous depth of the lake in its centre may preclude any attempt to raise it.

THE BROTHERHOOD OF ARCHITECTS: AN ESSAY.*

By Paul Waterhouse [*F.*], M.A.Oxon.

Too many practising architects of repute, and even a few of well-earned distinction, form no part of the Institute, forgetful, as too many of them are, that their influence and usefulness would be infinitely greater were they members of the corporate body, prepared to discuss important matters without bias, and to sink details of difference in a spirit of compromise, without which no Corporation, Community, State, nor Government of any description has ever been successfully carried on. . . . On the strength of long acquaintance with those present here to-night, and with many others who, alas! are lost to us, I venture to make an appeal to the good feeling, the good sense of British architects everywhere, . . . to join hands and show a united front to all and any who would do them wrong, either from an artistic or a business point of view.—The Presidential Address [p. 13].

ARISTOTLE observed that "man is a social animal," whereby he implied that isolation is nothing less than an infringement of manhood. It is not by mere accident that human beings are multitudinous; it is an integral part of their essence to be socially and politically bound one to another. Now this fact in relation to mankind has a counterpart in the smaller world of architects. The isolated architect is an impossibility—a logical nonentity, incapable of existence. Think of it for a moment; let us imagine, if it be possible, an only architect—a man with no past tradition to guide him, no present environment of contemporary taste, and with no critics to fear in the future. Even fancy cannot call up such a being.

Now I desire to draw attention to the fact that, by merely being an architect, a man becomes indissolubly part of a homogeneous corporation which in extent covers the greater part of both hemispheres; and in the matter of age is only a little younger than the human race. Of course I know that this consideration applies in a degree, not to our profession alone, but to lawyers, doctors, musicians, painters, and to a host of other bodies of artists and learned men, who can point with pride, not merely to a far-reaching sphere of activity in the present, but to a remote continuity in the past. For all this, I am ready to claim for our art that the conditions of which I am speaking apply to it in a quite peculiar manner, and to an unusual, a unique extent. It sometimes seems to me that the sculptor, the moral philosopher, and perhaps the ploughman are the only persons who can claim to share with the architect the common ground on which he meets the ancients. The lawyer, truly, studies ancient codes; and the basis of Roman law in our British statute-books rivals the architect's reliance on classical or mediæval tradition. But, for all that, our ancient heritage is far less modified in the process of handing down than is that of the lawyer. In other fields of learning and art

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which are nominally continuous from the earliest ages, how vastly have the very first principles altered! So greatly, that though the painter may look back to Apelles as his prototype, and though the men of music and medicine may claim descent even from Orpheus and Æsculapius, there is with them no such identity of the ancient with the modern as can in any sense compete with ours.

Does it ever occur to us to think, as our hand upon the drawing-board travels round the curves of an Ionic volute, that the very lines we are tracing have been followed by the men of the age of Pericles? Do we reflect that the problems of adapting traditional form to particular requirements, which occur in the use of the classical members, have all been studied stage by stage, probably on the same line of thought, by ancient Romans? Why, so close is the community of thought that, if Ictinus came among us some evening, nothing but the barrier of our limping Greek would prevent our talking the most engrossing "shop" with him till dawn. The thought is not merely a pretty fancy. Once dwell upon it, and it will often come back to the thinker as a cause of pride and of pleasure. But it is more than that. It is, and we ought to feel it to be, the sign of an immense responsibility. And the moral of it all is the urgent necessity for two things, *Study* and *Dignity*. No architect, I feel sure, can reflect upon the marvellous way in which he is involved as an architect in the great continuous past without feeling a sense of the responsibility which such a continuity brings with it. Isolation in an architect, complete isolation, is, as I have pointed out, an impossibility; but that tendency towards isolation which is a result either of idleness and ignorance, or of a mistaken idea as to the functions of inventive genius, is, alas! not an impossibility but a gruesome reality—it is an artistic crime.

I have said that *Study* and *Dignity* are the two attitudes of mind which should be encouraged by the thought of our noble and ancient lineage. Let me explain more fully what I mean. If a man is the inheritor of an ancient title, or the holder of an office of great worth and honour, there is attached to the decency of his actions a greater importance than in the case of irresponsible and unofficial persons. And I feel sure that in our own case the mere realisation of the fact of our identity with the great series of men who have borne the name of architect ever since history has been written enforces the necessity for a consistent decorum and for a conscientious study of those traditions which are nothing less than the insignia of our honourable post. The briefest glance at the elements of architectural propriety will show that what I am urging is no fancy but a first principle. It is no slight upon the genius of inventive design to say (and one must repeat the saying at the risk of seeming tedious) that to be a great architect a man must know, and know thoroughly, the methods of architecture in the past. It is often maintained that a great archæologist can never be a great architect, and that the merely accurate copying of ancient detail, whether Gothic or Classic, will never produce living, real, and spontaneous architecture. This is a most true, but most dangerous, doctrine. A copyist is not an artist, but I am prepared to hold that the architect whose works show a marked variation from traditional methods of detail and composition because he does not know what these methods are, or because he believes it to be an insult to his own originality to do what has been done before, will not produce buildings of any permanent or real artistic value. Here is an experiment to prove the truth of the paradox. Most of us have our heroes; most of us could single out a little group of three or four men, either living or in the modern past, whom we regard as the best architects of recent years. Examine the works of these men, and what do you find? Study and dignity—that is, knowledge of the past and a sense of decorum which positively precludes the introduction into their works of merely idle novelties.

There are people who, in despair of seeing the development of what they can recognise as

a new style, fall back upon a theory that our present epoch is so situated architecturally as to be only capable of borrowing bygone methods. Invention, they say, is played out; there have been so many styles in the past, and our present knowledge of these styles is so complete, that our age alone of all the ages is compelled to be eclectic rather than original. My remarks are in no way a concession to this theory, which I regard as false and inconsistent. Search where you will in the architectural history of mankind, and you will nowhere find a period of architects inventing a new style in the sense in which the ordinary outsider uses the term. Styles, to be sure, have been more than once imported from one country to another, and I think it must be acknowledged that wherever in any country you find a really noticeable change of style abruptly introduced, the change is due either to a conscious recurrence to some ancient manner, or to the equally conscious introduction of foreign methods or even foreign workmen. The nomenclature applied to the various periods of English and Continental Gothic architecture is largely responsible for our false ideas of mediæval development in style. Thus a "Perpendicular" building may be a widely different structure in detail and in general composition from a building of the "Decorated" period; but in our eagerness for classification we make distinct types of what are in reality links in a chain which, if compared one by one with the adjoining links, are found to exhibit but a trifling variation. The greater changes—the earthquakes of architecture—are as often as not due to the bodily transference of a style that, in the country to which it was native, was in itself the outcome of a gradual growth. I recall these self-evident facts to show that novelty in architecture, wherever it does occur successfully, is not the result of some giant among architects sitting down to his drawing board and saying, "Now for a startler out of my own head!" Still less is it the result of a crowd of pigmy architects setting to work to devise a brood of mis-shapen productions whose title to fame shall be that nothing like them was ever seen before on this astonished earth.

There is a church at Brescia which many of us know—the church of Our Lady of the Miracles. It is a Renaissance structure the front of which contains, I suppose, more carving per square foot than could possibly be exceeded. It is very beautiful, this carving, and one is glad of the exuberance, not sorry for it, as one would be if in the least respect it fell short of perfect dignity. Moreover, as if in satire on the riotous excess of ornament, a cartouche on one of the pilasters bears the Greek motto Μηδὲν ἄγαν. I think this should be our own motto to-day. Moderation—or, as one may even call it, *modesty*—is the key-note of true architecture, and it embodies the spirit of the lesson learnt from our thoughts of our brotherhood with the men of old. Modesty in the ethical sense of the word will give a man that unassuming reverence which will set him studying the works of his predecessors; modesty again in his own creations will temper his invention, refusing extravagance and avoiding excess.

So much for our brotherhood with the past—an aspect of our craft which must always be of importance, though it may be overlooked or not seen aright.

Our brotherhood with the men of the day—in fact, with one another—is necessarily of a twofold kind: one sort is the brotherhood in art; the other, as we are dealing with our living contemporaries, is a social affair, and a not unimportant one, of which I will say a few words later. With regard to the artistic brotherhood, it is right to ask ourselves, what is our relationship to one another in this respect, and what use do we make of it? There cannot, of course, be the slightest doubt that the architects of the day directly influence one another in the matter of style. This is due partly to pupilage, in which a master deliberately moulds the young men trained under him, partly to the tendency of hero-worshippers, to imitate, or attempt to imitate, the demigod whom they idolise; also to two reprehensible practices—one, the deliberate adoption in competitions of styles and features which are supposed to be generally successful in competitions of the hour or viewed favourably by the professional

adviser of the promoters; the other—last resource of barren minds—direct and undisguised "sneaking" from the illustrations in the professional journals. Of the last two methods no condemnation can be too strong. That there should be something of what we call fashion in architecture is perhaps only natural. It is an offensive term—a term that carries some sort of condemnation with it—but, on examination, it becomes apparent that in one sense it is nothing more nor less than another name for style. There are at all periods certain tendencies in the air, so to speak, which influence architects in a common direction; but to deliberately and perversely use broken pediments, for instance, because some one you know has just won a competition with a broken-pedimented design, or to endeavour—under a most mistaken idea, by the way—to find favour with an assessor by imitating his own latest invention or craze is, to say the least, a perversion of the proper motives of design, and a violation of our art.

Near akin to this evil practice is the trick of what I have called "sneaking," from the building papers. These journals, which are, I am quite sure, one of the most remarkable and most important features of our age, give a means of intercommunication of ideas among architects which in the past, and indeed not so very long ago, was practically non-existent. When I speak of sneaking from the building journals, let it be clearly understood that I do not apply the term generally to the derivation of ideas from the illustrations of our brethren's work, but only to the improper use of them for such a purpose. We know what cribbing is at school. The use of dictionary and grammar does not constitute cribbing, but we apply the term to the employment of a literal translation—that short cut which spares the energies at the expense of the morals. So it is with the case in point. The man who in designing, let us say, a doorway finds his faculties at fault flies to a bound volume of *The Builder*, turns over the pages till he comes to a feature more or less resembling what he wants, and then transfers it undigested to his own drawing-paper, making perhaps a few senseless alterations to salve an uneasy conscience, and possibly missing altogether the spirit of the design by changing the material in which it is to be executed. Such a man is cribbing; and all the time, by a right use of the journal in question, he might have got the help he needed, not perhaps in the form of a lift over his particular difficulty, but in the way of general education. The virtue of this multiplicity of reproduction of architectural drawings, which are nowadays within reach of everybody, is that a man instead of learning merely from his own master during pupilage, and from such works of architecture as he has the opportunity to visit, now has the whole concentrated spirit of the age laid before him; and it is not merely not reprehensible, it is positively a duty to himself and to his creations that he should form his own taste, and feed and cultivate his powers of design, by studying and taking both warnings and hints from the works of his contemporaries. It is a grand thing for a student to practise upon such drawings and reproductions the habit of criticism. A good critic I know is said to be a bad artist; but I expect it is also true that an architect cannot, unless he be a very exceptional genius, be a good designer unless he be also a fair critic. And this is the reason—a poor critic is easily satisfied with mediocrity, or worse than mediocrity, in his own work. He makes his plan, sees that he has got all the accommodation his client asks for, and being no critic, poor fellow! he at once, so to speak, passes his plan; whereas your man with the critical eye sees a blemish or two, and makes a fresh attempt. So with the elevation. Your uncritical man pitches it up anyhow, sees that the roofs work fairly well—or, if he is one of the quaint school, perhaps contrives that they shall not work well—and then, having provided a window for every room, and as many doors and chimneys as are needed, rests content, not knowing or caring whether it is worth while to bring the ever-blessed india-rubber into play and improve both skyline and proportions.

Then there is yet another point about the proper use of our contemporaries' work. The people who sigh for a return to mediæval methods are often forgetful or ignorant what these mediæval methods were. In spite of the obvious and well-marked similarity to one another of those Gothic buildings which belong to a particular period or place, little thought is given to the procedure of which such a similarity is the evidence. A few years ago, in writing a Paper for one of the Allied Societies on some Suffolk churches, I had the good fortune to come upon a copy of the contract for building a church tower in the fifteenth century. The whole document is a very short one, and could be easily written out on one side of a sheet of foolscap. Apparently, it was accompanied by neither specification nor drawings, for it contains within itself information which is obviously intended to take their place. Briefly, the principle upon which this agreement is framed is that the builders are to be guided in different parts of the building by various existing examples in the immediate neighbourhood. Now, in drawing favourable attention to this contract and its methods I may appear to be rather contravening what I said about undisguised robbery from other men's works. But a look at this tower—it still stands tottering at Walberswick, in Suffolk—will prove that, in accepting the churchwardens' directions as to the imitation of ecclesiastical works in the vicinity, the builders by no means lost their own spirit of design; at the same time—and this is the lesson we need—they produced a work which was typical of its time and of its place. There is hardly a building of the thirteenth, fourteenth, and fifteenth centuries that we do not admire for something more than its age; and yet these old-world craftsmen, full as they were of inventive power and of the truest, most real, and most spontaneous art, had none of that vulgar exuberance which in our own day sometimes makes even a big architect go out of his way to rear a building that, locally and chronologically, is a homeless exotic among its surroundings. If, owing to some unconscious spirit of the age, or to our having recourse to the same models for inspiration, or even to a half deliberate imitation, our works evince much that is common to the productions of our neighbours, it is well to consider that in this respect we have our prototype in those Middle Ages for whose return the pedants long. This is difficult and dangerous ground, and one is almost afraid of making the admission so candidly. Perhaps it were better expressed by saying that no architect need be ashamed of his design, if otherwise satisfactory, for the mere reason that it resembles other designs of his contemporaries. One thing is certain: there is a singular modesty in producing a building which, in the matter of both time and place, is exactly congruous to its position; and such modesty is the part of a great artist. Now, a man will not easily tell for himself, not being able to take a bird's-eye view of his own generation, whether he is committing anachronisms or not. In this respect his only safeguard is to avoid extravagances. For all he knows, he may be one of the front-rank men of his age, whom others are to follow; and thus his work, though perfectly harmonious with his epoch when viewed from a later century, will not appear so to him, nor, perhaps, even to his immediate contemporaries. But, as regards topographical fitness in design, it may not be out of place to say a few words, especially to those who may be engaged on small works in rural districts. Let us strive to be local. It is a grand secret of success; it is, moreover, a duty. I am not speaking now of large buildings in large towns, though even to them the principle has its application; but it is profitable to take warning from the constant blunders, committed by architects of all ranks of experience, due to the disregard of local traditions and the proper use of local materials in country districts and small towns. Modern means of communication have made it possible, without always increasing the cost of building, to use almost any materials in almost any place. But there are many cases in which the cost of carriage really does still leave the proper local material the cheapest, and in nearly all instances where local labour is employed

it stands to reason that the materials of the locality will produce the best work. Apart from considerations of cost and workmanship, which, after all, no architect dare disregard, there are sentimental reasons that make it imperative for a designer to give, at least on paper, the local materials and the local traditions, if there are any, a fair trial. It is simply astonishing that the principle here advocated is so seldom adopted. We all know the Model Village. There are examples all over the country of estates upon which a beneficent landlord has caused the smaller homes of his tenantry to be built or rebuilt in a substantial and often uniform manner; but how lamentably seldom has the architect employed studied, even in the least degree, the traditions of the country or district, which, if acted upon, would have made his creations appear a real model village, not, as is generally the case, a village of models. The few exceptions to this rule of impropriety stand out as conspicuous examples, and should lead all who are concerned in such matters to lay their plain lesson to heart.

I have spoken of the way in which, by the successful treatment of modern requirements, our contemporaries bring us help by giving the encouragement of example. Let not the meanest architect despair. There is, alas! another and a sadder way in which, by a sort of back-handed process, the humblest of us can be of service to his brethren—that is, not by our successes, but by our failures. It is hardly too much to say that every building that ever was erected bears a lesson of some sort on its face for those who know how to read it. It is a good plan for learners of all ages to look at every important building in this light. If it is not a success it is either a failure, or one of those insipid nonentities which are neither good nor bad; in fact, a dull building. As you look at it you can ask why it succeeds and why it fails, and if it is one of the dull kind ask yourself what features you would add, or what excrescence you would remove, to make it that harmonious whole which for some fault it has just failed to be. There are many faults which are only found to be blemishes by practice. Let us, then, not curse every man who makes a blunder; maybe Providence set him to do it for our learning. Who knows but we might have done the same thing but for his warning? Architecture is full of pitfalls, and a man who wants to be successful in his designs cannot do better than mark down in his mind a memorandum of those forms and combinations which, in his experience of other's work, do not make for success. I am not speaking of architectural crimes, but of those hundred-and-one little matters which look all right on an elevation—perhaps even passable in a perspective—but which, in all their innocence, are fatal in execution.

Now I come to the third part of my subject, which I may call our social connection with one another. The development of this relationship between architects may be said to be the great feature of the age as regards our profession. Education, it may be urged, is an equally important feature, but I think the two are merged in one; for without the organisation which has been the work of the last fifty years, the education question would never have been started or fostered.

The solidity of the Institute and of the Architectural Association; the number and extent of the Societies in England; finally, and perhaps principally, the system of alliance by which non-metropolitan Societies are connected with the London Body, are evidences of a social unity among the architects of our country which is as gratifying as it is impressive. We are, alas! a frightfully overcrowded profession; there are perhaps more T-squares than commissions in our islands, and, according to all the laws that govern the natural instincts of wild animals, every man's hand ought to be against his neighbour. Instead of such a reign of terror, what do we see? An ever-increasing cordiality of union, an almost daily strengthening of the links which bind the profession together, and, what is more, an effort towards the sound education of our pupils such as never was made before. I am quite aware that

there are those, even among architects, who do not view these recent signs aright—who say, indeed, that our actions are to be interpreted by much less worthy motives, and that our Societies and Examinations, so far from being the index of an inclination to love our neighbours, help our juniors, and benefit our profession, are nothing more nor less than a commercial ring—a machinery by which those who happen to find themselves inside a more or less desirable enclosure are endeavouring to keep others out. They go further, these our enemies; and, wherever they can get an audience, they show by many a fair-seeming argument that by thus banding ourselves together we are introducing into the world of art a unionism which is underbred and tradesmanlike; our Examinations, say they, are an unerring sign of our Philistine decadence, and they prophesy of our rising generation that, nurtured in an unwholesome atmosphere of crude and discursive book-work, it will be a race of ill-bred, inartistic prigs. Where there is any truth in these attacks, let us lay that truth, however small, to heart. The men in opposition have a function to perform for our benefit, and we may as well sift from the chaff some grains of real warning. If ever our Examinations get over-scientific, or even over-exacting, let our Examiners prune away the unnecessary elements; if our pupils prepare for these Examinations in a wrong way, cramming instead of learning, let us remember that we may be to blame, not the Examinations. If our Sessional Papers are occupied unduly in the less elevating sides and aspects of our craft, let us change our programmes; if the members of our Societies exclude candidates for unworthy or personal motives, let us try to introduce a better feeling; if our central or branch Societies appear to waver for an instant from their true and higher aims, let us vigorously set them on the rails again; but never, never let us weakly give in; never let us acknowledge that our ever-growing system of organisation for union, and of examination for education, is a thing in itself either vicious or defective. A genius may sometimes be a solitary bird; he need not be. Let us for our part be each a genius and something more; let us be genial. *L'union fait la force* even among architects. I speak strongly, for I feel that sometimes we have need to remind ourselves of our unity, to think of it even with passion rather than apathy, and to go forth from our gathering together determined, each of us, to be, not an architect only, but one among the noble army of architects, strong in that sympathetic strength which is transfused from man to man, and which will enable every member of our mighty host, not merely to build his little pile of bricks and draw his little 5 per cent., but to give and (what is sometimes far harder) to accept the helping hand of fellowship.

Let me, in conclusion, draw together these rather scattered remarks, and endeavour to make plain the thread of my intention. Isolation is no more possible to an architect than to a human being as such. Items in a vast congregation, we can neither escape from our obligations to our contemporaries nor from our rich inheritance in the past. Every true architect wears, so to speak, the full uniform of a mighty army, which is as old and as extensive as the human race. Other branches of art and learning may rival our antiquity, at least in appearance; but none have so completely carried down an identity of tradition which, like some unextinguished flame, burns with an unchanged radiance and feeds on the same fuel as of old. This link of union with the past involves a great responsibility. It carries with it the proudly borne burden of a twofold duty—namely, the necessity for patient study and complete dignity. Indeed, study, so far from being an evidence of incapacity, is alike the outcome and the mainspring of the only true dignity. The best architects and the greatest have always humbly followed traditions, and novelty for novelty's sake is the badge either of the tyro, or, paradoxical as it may seem, of an underbred sterility. The cry for a new style argues in the utterer a complete ignorance of the history and true principles of architecture, and the theory that because we cannot see progress in our modern work it is absent proves that the theorist knows

nothing of that fundamental natural law, that true and wholesome growth is, in all departments, almost invariably invisible as a process though measurable as a result. For this reason efforts at invention in art are almost always failures, even when put forth by a Michelangelo. The old Greek doctrine of virtue as a mean, and of excess as vice, is, after all, about the biggest truth that the Greeks have handed down.

I have tried to show that with the men of our own day we have a no less vital unity than with those of the past. We influence one another directly by pupilage, indirectly by example. Such influence is readily open to abuse, and we must beware of appropriating either from ancients or moderns whatever we have not first assimilated. The transference of crude, undigested matter is as fatal in art as in the physical world; but generous criticism, the habit of weighing the value of works of art, and of analysing those elements in them which make for success or contribute to failure, so far from being a fault is the only basis of true design. We need never fear that we are falling into decadence because we find that our designs bear a certain similarity to those of our brethren, if they are sound compositions and pure in detail. The men of the Middle Ages had no such fear; in fact, the very ease with which we can fix alike the date and locality of any ancient building is a sufficient proof that local and chronological congruities were, unconsciously no doubt, primal aims with our brethren of old. I would not be misunderstood to advocate the suggestion that every architect in the first conception of his design should strive to clothe it in a garb as like other contemporary buildings as possible, nor do I for a moment run counter to the obvious truth that new requirements need new solutions. Indeed, it is the conscientious dealing with any hitherto unattempted problem which gives the most legitimate opening for originality, and presents an architect with the most patent opportunity for striking out a new line. Chiefly do I plead that we should not be wanton in the matter of detail.

Lastly, our social relationships, so greatly facilitated and organised of late years, carry with them, as do all privileges, their corresponding duties. The men of the last fifty years, many of whom are with us now, seeing with their own eyes the fruits of their labours, have built up with vast care, untiring energy, and the expenditure of untold time a fabric of association which it is the privilege of our younger generation to cherish with a whole-hearted enthusiasm. And if there be, here and there, a man, even among the ranks of our Societies, who in the back of his mind is in the least degree doubtful about the value of all this organisation—who, with a too prevalent scepticism, asks himself, or even influences his brethren by asking them, whether all these Societies, and examinations, and councils, and committees, and alliances are not either rotten or disingenuous—to that man I would address my few remaining words. I would say to him: Sir, I appreciate your doubts and can understand the reasoning that leads up to them. But such doubts after all do a man small credit. They are bred, when you come to think of it, by a distrust in human nature—a distrust which generally has its roots in distrust of self. Then cast away that unnatural diffidence. Restore alike your self-respect and your confidence in your brother craftsmen. "Every man for "himself" is at best a selfish motto; and, what is worse, it bites at the heart of civilisation—it is the war-cry of a savage. Rather let us all, by every means in our power, by personal influence, by individual enthusiasm, by kindly forbearance, by ungrudging sympathy, foster and cherish the welfare and continuance of that great, ancient, and living reality—The Brotherhood of Architects.

9, Conduit Street, London, W., 5 *December* 1895.

CHRONICLE.

THE BUSINESS GENERAL MEETING.

Election of New Members, &c.

In the absence of the President, the Chair, at the first Business General Meeting of the Session held 2nd inst., was taken by Mr. Alex. Graham, F.S.A., Vice-President, who conducted the usual quarterly elections by show of hands. Among the new members thus elected are Mr. Falkener and Sir Frederic Leighton, Hon. Fellows, the former of whom is sometimes called "Ephesian Falkener," his MS. Sessional Paper on two pieces of tile tubes from Ephesus and Miletus, bearing the date 18th December 1848, having been preserved in the Institute Library. The Hon. Corr. Members elected are Professor Schröter, of St. Petersburg, whose drawings of some of the principal theatres of that capital were hung round the Meeting-room on Monday; Herr Stübben, of Cologne, whose name and works have been more than once mentioned in the Journal; and Herr Heimann, also of Cologne, who was first introduced to the Council by the late venerable Dr. Reichensperger, of that city.

The other business of the Meeting, which was very sparsely attended, was a discussion, brought about by Mr. G. A. T. Middleton [*A.*], on some of the Papers of Questions set by members of the Board of Examiners in the Intermediate and Final Examinations. A report of Mr. Middleton's observations, with the replies thereto, will be found on a subsequent page, as an Appendix to the Minutes of the Meeting.

THE PRELIMINARY EXAMINATION.

Newly Registered Probationers.

The Chairman announced to the General Meeting of Monday that at the Preliminary Examination held in London, Liverpool, and Newcastle on the 12th and 13th ult. 63 applicants were examined, out of whom 37 passed, and the remaining 26 were relegated to their studies. The total number examined in London was 44, of whom 26 passed; in Liverpool 14, of whom 7 passed; and in Newcastle 5, of whom 4 passed. The names and addresses, with other particulars, of the 96 (including those of 59 exempted applicants) newly registered Probationers, given in alphabetical order, here follow:—

ALEXANDER: John Thomas; 18, Spring Terrace, North Shields [*Master*: Mr. Henry Gibson].

ANDERSON: William Kirkpatrick; c/o Mrs. Irving, 6, Stanley Street, Paisley Road, Glasgow [*Master*: Mr. James Lindsay*].

ANSON: Henry Percy Richmond; 159, Denmark Hill, S.E. [*Master*: Mr. R. Langton Cole*].

BAILLIE: Richard Douglas; 98, Bonnygate, Cupar, Fife [*Masters*: Messrs. C. & L.* Ower].

BAILLIE-HAMILTON: George Leslie; Waverton Rectory, near Chester [*Masters*: Messrs. T. M. Lockwood* & Sons].

BALLARDIE: James Hutcheson de Caynoth; Harlow Manor, Harrogate [Yorkshire College, Leeds].

BEAUMONT: Chevalier Worby; 100, Palace Road, Tulse Hill, S.W. [*Master*: Mr. E. C. Beaumont].

BENNETT: Charles Herbert; Birch Vale, near Stockport [*Master*: Mr. C. H. Heathcote*].

BENTLEY: David Hallam; Lancaster House, Lancaster Park, Richmond, Surrey [*Master*: Mr. H. F. Trippel].

BLOOD: Charles Guy; c/o John Clarke, Esq., 19, Castle Street, Liverpool [*Master*: Mr. John Clarke*].

BOTTERILL: Austin Barugh; Kew Lodge, Kew Road, Weston-super-Mare [*Masters*: Messrs. Henry Crisp* & Oatley].

BOURNE: Walter Hargreaves; Sylvan Cottage, Elton Parade, Darlington [*Masters*: Messrs. Moscrop* & Clark*].

BRADSHAW: Philip James; c/o J. C. Traylen, Esq., 16, Broad Street, Stamford [*Master*: Mr. J. C. Traylen*].

BRATT: Ernest William; Victoria Street, Wednesbury, Staffs [*Master*: Mr. Joseph Lavender*].

BRIDGEN: Charles Henry Edward; Mount Ephraim Hotel, Tunbridge Wells [*Masters*: Messrs. Truefitt & Watson*].

BRIGHT: Lawrence Lee; 19A, Gedling Grove, Nottingham [*Master*: Mr. Lawrence Bright].

BROOKS: Stanford Morton; Laleham Lodge, Clapham Park, S.W. [*Master*: Mr. J. G. Robins].

BROWN: William Henry; 47, Hereford Road, Bayswater, W. [*Masters*: Messrs. Wylson* & Long*].

CAMPBELL: Edmund Archibald; Rosedell, Twyford, near Winchester [*Masters*: Messrs. Cancellor & Hill*].

CAYLEY: Henry, M.A.Cantab.; Garden House, Cambridge [*Master*: Mr. C. Hodgson Fowler,* M.A., F.S.A.].

COLLARD: Albert Sydney; 81, Trafalgar Road, Egremont, Cheshire [*Master*: Mr. Harry May*].

COLLES: Godfrey; 5, Station Road, Cheadle Hulme, Stockport [*Master*: Mr. Paul Ogden*].

COOPER: Frank; 110, Gilnow Park, Bolton [*Master*: Mr. Thomas E. Smith].

CORMACK: James Noble; 12, Fountainhall Road, Edinburgh [*Masters*: Messrs. Frank W. Simon & Tweedie].

CREWDSON: Henry Douglas; Alderley Edge, Cheshire [Manchester School of Art].

CROSBIE: Lawrence Stanley; 35, Grove Hill Road, Camberwell, S.E. [*Master*: Mr. E. C. Beaumont].

DAKERS: Edward; 94, Nethergate, Dundee [*Masters*: Messrs. C. & L.* Ower].

DAMMAN: Edouard Xavier Aimé; 36, Great Russell Street, W.C. [*Master*: E. W. Jennings*].

DICKINSON: William Charles; 120, Mildmay Road, Islington [*Masters*: Messrs. Newman* & Jacques*].

ELLIS: George Rowland; Stone Lane, Millfield, Peterborough [*Master*: Mr. Stallebrass].

FINNEY: Percy Howard; c/o Messrs. Naylor & Sale, Irongate, Derby [*Masters*: Messrs. Naylor* & Sale].

FLETCHER: John Alfred; 27, Gerrard Street, Halifax [*Masters*: Messrs. George Buckley & Son].

FORDYCE: George; 76, Union Grove, Aberdeen [*Masters*: Messrs. Brown & Watt*].

GALLOWAY: Robert Alexander; 6, Hermitage Gardens, Morningside, Edinburgh [*Master*: Mr. Hippolyte Blanc, A.R.S.A.].

GAMMELL: Kensington; Lichfield House, Weston-super-Mare [*Master*: Mr. W. V. Gough].

GAULDIE: William; 22, Union Place, Dundee [*Masters*: Messrs. C. & L.* Ower].

GIBBINS: Arthur Everett; Molesworth House, Palace Place, Brighton [*Master*: Mr. J. G. Gibbins*].

GIBBONS: John Harold; c o Messrs. T. Worthington & Son, 46, Brown Street, Manchester [*Masters*: Messrs. T. Worthington* & Son*].

GIBBS, Thomas Harry; 39, Poland Street, W. [*Master*: Mr. A. S. Flower,* M.A., F.S.A.]

GLOYN: Percival Edward; St. Levan, Geraldine Road, Wandsworth, S.W. [*Masters*: Messrs. Burch & Forge*].

GOODALL: Harry Hornby; 27, Noel Street, Forest Side, Nottingham [*Master*: Mr. A. H. Goodall].

GOSLETT: Alfred Harold; The Limes, Stanmore, Middlesex [*Master*: Mr. R. Selden Wornum*].

GREEN: William Curtis; 20, Queen's Square, W.C. [*Master*: Mr. John Belcher*].

GREGORY: Leolin Charles; 29, Shaftesbury Road, Ravenscourt Park, W. [*Master*: Mr. A. Burnell Burnell*].

HARLEY: Edwin; 1, Kerfield Crescent, Groove Lane, Camberwell Green, S.E. [*Master*: Mr. J. E. Harley].

HIGHMORE: Samuel George; The Grange, Poppleton, York [*Master*: Mr. W. Hepper].

HODGSON: Ernest John; 85, Onslow Gardens, South Kensington, S.W. [*Master*: Mr. H. N. Travers].

HOPE: Cyril Edward Wolley; 37, Thurlestone Road, West Norwood, S.E. [*Master*: Mr. A. O. Collard*].

HUNTER: James Douglas; 4, Pemberton Gardens, St. John's Park, N. [*Master*: Mr. F. Hammond*].

KENT: Ivan Means; Rivington, Newmarket Road, Norwich [*Master*: Mr. G. J. Skipper*].

KING: Frederick Augustus; 154, Brecknock Road, Camden Town, N.W. [Polytechnic School of Architecture, Regent Street, W.]

KISLINGBURY: Arthur Vernon; Parkside, Hendon Lane, Finchley, N. [Polytechnic School of Architecture, Regent Street, W.]

LAWTON: William George; Wychelm, London Road, Salisbury [*Master*: Mr. Fred Bath*].

LOBLEY: Frank Joseph; City Engineer, Architect and Surveyor's Office, Norwich [*Master*: City Engineer, Norwich].

LOOS: Julian Henry Keith; Mayfield, 10, Hillcrest Road, West Hill, Sydenham, S.E. [*Master*: Mr. E. H. Bourchier*].

MACKINNON: Walter; 12, Taviton Street, Gordon Square, W.C. [*Master*: Mr. C. F. Doll].

MARSH: Alfred John; Marsholgate House, Sale, Cheshire [*Masters*: Messrs. Woodhouse* & Willoughby*].

MENCE: Henry Frederick; 84, Patshull Road, Camden Road, N.W. [*Masters*: Messrs. Yetts* & Sturdy*].

MERILLE DE COLLEVILLE: Henry Louis Emile; 24, Chatham Place, Brighton [Brighton Municipal School of Science and Art].

MILLER: Alfred Thomas; 8, Saxon Street, Dover [*Master*: Mr. Edward W. Fry].

MILLER: Robert Thomas; 58, Hercules Road, S.E. [*Master*: Mr. W. H. Woodroffe*].

MILNE: John; 374, Holburn Street, Aberdeen [*Masters*: Messrs. Matthews & Mackenzie].

MULES: Roderick John; 49, Welbeck Street, Mansfield [*Master*: Mr. R. Frank Vallance*].

MURPHY: Bailey Scott; 11, McLaren Road, Edinburgh [*Master*: Mr. Henry F. Kerr*].

NICOL: George Salway; Elmdon Lodge, Acocks Green, Birmingham [*Masters*: Messrs. Essex,* Nicol,* & Goodman].

OGILVY: Gilbert Francis Molyneux, B.A.Oxon.; 47, Castle Street, Edinburgh [*Master*: Mr. Hippolyte, Blanc, A.R.S.A.].

OMAN: William Campbell; 107, West Green Road, Tottenham, N. [Mayo School of Art, Lahore].

OVERBURY: Thomas; 6, Well Walk, Clarence Street, Cheltenham [*Masters*: Messrs. Middleton, Prothero, & Phillott].

PEARSON: Harry John; 27, Villa Road, Brixton, S.W. [*Master*: Mr. Arthur Vernon].

PENTLAND-SMITH: James Buchanan; 14, Claremont Terrace, Edinburgh [*Master*: Mr. John Lumsdaine].

PIERCY: Arthur Raymond Pratt; The Villas, Stoke-on-Trent [*Masters*: Messrs. Wood & Hutchings*].

PIRIE: James Masson; 341, Holburn Street, Aberdeen [*Masters*: Messrs. Matthews & Mackenzie].

QUAYLE: Walter Osborne: Bay View, Lezayne Mount, Ramsay, Isle of Man [Peel Grammar School].

RAINEY: Hugh Roach; Holwell Vicarage, Burford, Oxon [*Master*: Mr. C. Kemshead].

RUSSELL: Thomas Herbert, B.A.Cantab; 34, Upper Hamilton Terrace, St. John's Wood, N.W. [*Master*: Mr. John Belcher*].

RUTHERFORD: Alastair McIntosh; 32, Argyll Place, Aberdeen [*Masters*: Messrs. Matthews & Mackenzie].

SCRIVENER: Edward Douglas Mountford; The Cedars, Newcastle, Staffordshire [*Masters*: Messrs. R. Scrivener & Sons].

SEFTON: Henry Webster; 13, Chadwick Street, Bolton [*Masters*: Messrs. Bradshaw* & Gass*].

SENIOR: Arthur Ernest; 7, Belgrave Parade, Newcastle-on-Tyne [*Master*: Mr. J. W. Frazer*].

SIDEY: John; 160, High Street, Montrose [*Master*: Mr. John Sim].

SINGERS: George; 11, Belvidere Street, Aberdeen [*Master*: Mr. James Souttar].

SKIPTON: Horace Pitt Kennedy; Glendermot, Cavendish Road, Sutton, Surrey [*Master*: Mr. R. Langton Cole*].

SMITH: George Thow; 11, Gladstone Place, Aberdeen [*Masters*: Messrs. W. & J. Smith & Kelly].

SMITH: James; 230, Great Western Road, Glasgow [*Master*: Mr. John B. Wilson*].

SMITH: William Ryle; Norwood, Seafield, Broughty Ferry [High School, Dundee].

SOAMES: George Alfred; Fernleigh, Westcombe Park Road, Blackheath, S.E. [*Masters*: Messrs. Newman* & Newman*].

SPARROW: Reginald George; Claremont, The Park, Nottingham [*Master*: Mr. Sutton].

STONEBRIDGE: Walter Butler; Oakley, Bedfordshire [*Master*: Mr. George Highton*].

VAUSE: Fred; West Cliff Station, Whitby [*Master*: Mr. E. H. Smales*].

WARD: Lloyd Foster; 41, Trafalgar Road, Mosely, Birmingham [*Master*: Mr. W. Henman*].

WATSON: Walter Crum; 9, Radnor Place, W. [*Masters*: Messrs. Alfred Waterhouse * & Son*].

WEST: Daniel; 30, Clarence Parade, Southsea [*Master*: Mr. C. W. Bevis*].

WHIDDINGTON: Henry Morgan; 71, Queen Street, Cheapside, E.C. [*Master*: Mr. W. H. Duffield*]

WILKINS: Victor; 41, Cawley Road, Victoria Park, N.E. [*Masters*: Messrs. Truefitt & Watson*].

WINGATE: Alexander; 4, Bowmont Terrace, Glasgow, W. [*Master*: Mr. Miles S. Gibson].

WOORE: Joseph Alfred; 39, Wilfred Street, Derby [*Masters*: Messrs. Naylor* & Sale].

The asterisk (*) affixed to the name of a Master denotes a member of the Institute.

For this Examination there were 134 applicants (ten more than stated on page 17), of whom 59

(three more than previously stated) were exempted from sitting for any of the subjects of the Examination. Four others did not attend, and their fees have been returned; while eight are to come up for the Preliminary Examination in June 1896.

The Tribunal of Appeal: London Building Act 1894.

The Secretary of State for the Home Department has appointed Mr. A. A. Hudson, Barrister-at-Law, of No. 5, Paper Buildings, Temple, to be a Member of the Tribunal of Appeal constituted under section 175 of the London Building Act 1894, in succession to the late Mr. D. Cubitt Nichols. The Tribunal consequently now consists of Mr. Arthur Cates, appointed by the Council of the Institute, Chairman; Mr. Penfold, appointed by the Council of the Surveyors' Institution; and Mr. Hudson, appointed by the Home Secretary.

The Trinity Hospital or Almshouses.

On the recommendation of the Art Standing Committee, the Council passed a Resolution, on the 18th ult., to the effect that every attempt should be made to save the Trinity Hospital or Almshouses at Mile End from destruction; and a letter appeared in *The Times*, on the 25th ult., in which this decision was supported by Mr. Penrose, F.R.S., as President of the Institute, and Mr. Waterhouse, R.A., as Chairman of the Art Committee. Letters were also addressed to the Master and Deputy-Master, and to the "Elder "Brethren," of the Corporation of Trinity House. A Memorial was further submitted, as follows:—

To the Charity Commissioners for England and Wales.

GENTLEMEN,—The Council of the Royal Institute of British Architects, incorporated under Royal Charters in the seventh year of William IV. and the fiftieth of Victoria, have been informed that it is the intention of the Charity Commissioners to hold an inquiry for the purpose of considering certain charitable endowments administered by the Corporation of Trinity House. They have learnt that a scheme comprising certain alterations in the method of dispensing the Charity is already before the Commissioners; and that one of the matters contained therein is a suggestion for the demolition of the Trinity Hospital or College at Mile End, in the East of London.

We desire to express, on behalf of the Royal Institute of British Architects, our earnest hope that the Commissioners will withhold their consent from any proposal involving the demolition of the buildings in question. There is strong evidence to show that they are the work of Sir Christopher Wren, possessing very considerable architectural and historical interest, and that they represent, in fact, the only example of Sir Christopher Wren's work now remaining in East London. We venture, therefore, to think that any evidence, or other circumstances, which could warrant their destruction must necessarily be exceedingly strong.

A Committee acting on behalf of the Institute have recently examined the buildings and reported that they are in excellent preservation. Their sanitary defects are no more than may be found in other old buildings of the kind, the prominence now given to such defects being due in a great measure to the recent development of sanitary science and the general advance in such knowledge. It is these sanitary defects, we are informed, which are being used as an argument for the demolition of the old Hospital; but they can easily be remedied, in our opinion, at a slight expenditure. We therefore cannot but believe that the Charity Commissioners will withhold their sanction from any scheme involving the destruction of the old Trinity Hospital: an historical monument of unique interest, forming in the East of London one of those architectural landmarks which, if destroyed, can never be replaced.

The Council of the Royal Institute of British Architects are indeed so deeply impressed with the importance of preserving these buildings that they ask the favour of being allowed to appear before the Charity Commissioners, and to be heard through their appointed representatives, in defence of the same, at the inquiry to be held on Wednesday the 27th November.

The foregoing Memorial, which was not under seal, was signed by the President, by Mr. Waterhouse, Mr. Macvicar Anderson, and the Hon. Secretary of the Institute; and countersigned by the Secretary.

The Trinity Corporation having submitted a scheme to the Charity Commissioners for the disposal of the site of the Almshouses or Hospital for building purposes, and the creation of out-pensions, a public enquiry was held 27th ult., at the Trinity House, by Mr. G. S. D. Murray, an Assistant Charity Commissioner, with the view of ascertaining the facts of the case, particularly as regards the charitable endowments available for the support of the Hospital.

The scheme was opposed by several Societies and individuals, the Institute being represented at the enquiry by the President and Mr. Macvicar Anderson; and also by Sir Frederic Leighton, whose admirable letter to the Chairman of the Charity Commissioners is worth recording:—

"Although the state of my health forbids my "attending any public meeting or taking part in "any public discussion, I am extremely anxious "that my absence from to-morrow's meeting "should not be attributed to indifference on my "part to the grave matter before it. I feel, on "the contrary, the keenest anxiety in regard to it, "and should deplore more deeply than I can say "the destruction of the most delightful and "characteristic group of buildings which is to-"day menaced—a relic unique in its artistic "character, and, unlike many relics, still in the "full efficiency of its usefulness; a relic, too, "which surely the historic associations connected "with it should keep in the reverence of a patriotic "people."

The enquiry elicited the important fact that ample funds exist for the maintenance of the charity. In addition to the endowments which are specially applicable to the Almshouses, Mr. Kent, Secretary to the Trinity Corporation, stated "that, apart from the funds which were dealt "with by the Public Accounts Committee, by "Parliament, or by the Charity Commissioners,

" the Trinity House had an income of something " like £8,000 a year," and it was shown that less than one-half of this available income was required to supplement the special endowments. This portion of the case may be conveniently summarised in the words of the Assistant Commissioner, who stated that " it might be taken " from the evidence given that there was ample " money to keep up the almshouses."

It was further elicited, from the report of the Surveyor to the Trinity Corporation, that the structure of the almshouses is sound and in a substantial state of repair; evidence which was subsequently confirmed on behalf of the Institute. That it is desirable to carry out certain sanitary improvements was admitted; but these were shown to be comparatively of an inexpensive character. Thus it was demonstrated that neither lack of funds, nor structural weakness, nor sanitary defects could be pleaded as an apology for the demolition of the buildings.

The President bore testimony to the architectural features of the Hospital being the work of Sir Christopher Wren, and of the great value of the buildings to architectural students as a chaste example of the great architect's work.

Mr. Macvicar Anderson further testified, from a careful examination of the buildings, to the simplicity, quaintness, and picturesqueness of the architecture, producing a result no less unique than charming and beautiful. The removal of the buildings he would regard as an irreparable loss to the cause of art. On the second day of the enquiry the Surveyor to the Almshouses stated, in reply to leading questions from the Secretary to the Corporation, that the houses were unfit for human habitation; an assertion which was refuted by Mr. Macvicar Anderson, who remarked that it seemed to him, to say the least, most extraordinary that although the Surveyor had by his own admission acted in that capacity for 30 years, and had quite recently reported to the Elder Brethren as to the satisfactory condition of the structure, he appeared to have only that morning awakened to the idea that the Almshouses were not fit for human occupation! That the buildings were admirably adapted for their purpose was obvious, Mr. Macvicar Anderson stated, not merely as the result of personal observation, but as demonstrated by the robust and healthy character of the inmates, to whom infectious disease was unknown, and who lived to a great age.

Evidence was given on the part of Societies who opposed the scheme, by Mr. Shaw Lefevre, Mr. Ashbee, Mr. Basil Holmes, and Mr. Thackeray Turner, as well as by Mr. Spencer Charrington, M.P., on behalf of his constituency, and by Mr. Kerwyn on behalf of the Vestry and of the occupants of the Almshouses, who, it may be stated, had already presented a memorial in opposition to the scheme.

Having regard to the weakness of the case for demolition, and to the importance of the rebutting evidence, as well as to the keen interest evinced by the public in the enquiry, it may be reasonably anticipated that the decision of the Charity Commissioners will be satisfactory to the opponents of the scheme. The courtesy of the Assistant Commissioner was only equalled by the lucid grasp which he exhibited of the subject of the enquiry; and although he studiously maintained the strictest impartiality, the words in which, at the conclusion of the enquiry, he embodied a suggestion, " in the event of the Corporation's " desiring to retire from their proposals," or in the event of the Commissioners' " not sanctioning " them," may be taken as not altogether devoid of significance.

That the result of the enquiry may be the maintenance of buildings so admirably adapted to their purpose, and so interesting and valuable from an artistic point of view, all who have taken an intelligent interest in the matter must ardently desire.

The Worshipful Company of Plumbers.

The Banquet and Conversazione held at Saddlers' Hall on the 27th ult., when the Lord Mayor and the Sheriffs of London, the ex-Lord Provost of Aberdeen, and a large gathering of Mayors from all parts of England were entertained by the Master and Wardens of the Worshipful Company of Plumbers, were of an eminently agreeable character. The President and several members of the Institute were among the guests, including Mr. F. W. Porter, Master of the Saddlers' Company; Mr. John Taylor, C.B., of Her Majesty's Office of Works; Mr. P. Gordon Smith, Architect to the Local Government Board; Mr. J. Douglass Mathews, Chairman of the Guildhall Library Committee; Mr. Thomas Blashill, Architect to the London County Council; and others.

Among the more distinguished persons present were Sir Algernon Borthwick (now Lord Glenesk), whose health was drunk as the first plumber who had entered the House of Lords; Lord Shand; Sir Hugh Owen, K.C.B., Permanent Secretary to the Local Government Board; Sir Walter Foster, M.P.; Sir George Kekewich, K.C.B.; Sir Edwin Galsworthy; Sir Thomas Roe; and a former Lord Mayor, Sir Stuart Knill, Bart. The Presidents of the Surveyors' Institution, of the Institute of Builders, of the Society of Municipal and County Engineers, of the Society of Medical Officers of Health, and a Vice-President of the Architectural Association, were also present.

A Teaching University for London.

On the 28th ult. Lord Kelvin headed a deputation to the Duke of Devonshire for the purpose of urging the Government to introduce, without further delay, a Bill on the lines of Lord Playfair's

University Commission Bill 1895, appointing a Statutory Commission to carry out the recommendations of Lord Cowper's Commission, with an additional clause to the effect that there should be a right of appeal to the Privy Council for the disallowance or alteration of any statute or ordinance proposed by the suggested Statutory Commission previous to such ordinance being laid before Parliament for confirmation. The deputation included representatives of the Royal Commission presided over by Lord Cowper, delegates from the Senate, the Convocation, and the Committee of Graduates of the existing University, from University College and King's College, from the London Medical Schools, from the Royal College of Physicians and the Royal College of Surgeons, and from various other Societies interested in higher education. Lord Kelvin explained that the clause it was proposed to introduce was strictly in accordance with precedent Acts of similar tenor, especially the Oxford and Cambridge Act 1877 and the Scottish University Act 1889. Appeals to the Privy Council would not be on points of law, but on questions of policy, which would naturally have been referred as in accordance with precedents to a University Committee of the Privy Council appointed *ad hoc*.

Professor Rücker, speaking for the members of the Senate, said that they would not approve a scheme intended to obtain some new advantage unless satisfactory provision were made for the continuance of the work at present undertaken by the University. They believed, however, that the impartial examination of all candidates, no matter where educated, for a degree could still be carried on under the Gresham scheme ; therefore they supported the memorial. The safeguards proposed were manifold. A new Senate, on which many interests and institutions were represented ; a Board specially appointed to superintend the examination of external students ; the assertion of the fundamental principle that the same standard of knowledge should be exacted from all candidates for degree ; the power to mingle with the Professors of the University other external examiners who would have no real or supposed bias in favour of London students ; an opportunity given to those who thought those safeguards insufficient to lay their views before a Statutory Commission which had power to make minor modifications in the scheme ; and, finally, the right to appeal from the Statutory Commission to the Privy Council. If the scheme of the Gresham Commissioners were carried out, the Charter of the University must be modified ; and to this the Senate would consent without making a claim to review the decisions of the Statutory Commission or the Privy Council thereafter.

The Duke, in reply, admitted the highly representative character of the deputation, not only of teaching bodies more or less connected with the University, but of graduates and other members. They could not profess, however, to represent fully the opinions of students drawn from the whole British Empire, who could never avail themselves of facilities for university teaching in London, but who in the past had derived valuable guidance from the University in their studies, and highly prized recognition of their attainments. He doubted whether, after all precautions, the University would be as accessible to this class of student as before. He could not commit the Government to any course. He had desired, before bringing the matter before his colleagues, to learn the views of those represented by the deputation, but it must also be his endeavour to learn the opinions of the external students above referred to. His Grace then referred to the differences of opinion on the scheme which had been expressed by Convocation. It appeared to him a somewhat strong proceeding that, in order to create a Teaching University for London, a constitution should be imposed upon the present University against the will of Convocation, which, under its existing Charter, possessed the right of imposing a veto upon any alteration in its constitution.—It was explained to his Grace that Convocation had expressed its agreement to the scheme by a majority of two to one.—The Duke then referred to certain amendments drawn up by a section of Convocation, which were stated to be necessary in order to give effect to the scheme, and made further allusion to the opposition of a large body of country graduates. He thought it desirable that they should by every means in their power endeavour to conciliate the opposition to the scheme. It was possible that a very small amount of opposition in the House of Commons to the Bill would be fatal to its passing in the next Session.

The Times of the 29th ult., commenting on the reply to the deputation, says : " If unanimity, or " anything approaching to it, is to be sought for " as the result of this inquiry before the reforms " unanimously demanded by the friends of higher " education in London are initiated, the establish- " ment of a teaching university here, for which " educational reformers have been struggling for " years, will be substantially relegated to the next " generation. The Parliamentary difficulties in " the way of passing a Bill that meets with any " strenuous resistance need not be insisted upon. " The present Government, supported by an im- " mense majority, and including so many dis- " tinguished statesmen, will find it no hopeless " task to overcome such difficulties, especially as " the Opposition are committed by Lord Playfair's " Bill to this very settlement of the question. " But the problem will never be solved if the " party of resistance are encouraged by being told " that the acquiescence of the country graduates " is indispensable, and that a measure brought in

"by the strongest Administration of the century "cannot be passed if a handful of malcontents "oppose it."

The Modified Reservoir at Philæ [Vol. II. p. 621].

The protest of the Académie des Beaux-Arts (Institut de France) against the alleged proposal to submerge the island of Philæ, which was made last July, has received the following Ministerial reply:—

Paris, le 14 octobre 1895.

MONSIEUR LE SECRÉTAIRE PERPÉTUEL,—Vous m'avez fait l'honneur de me transmettre, le 23 juillet dernier, un vœu exprimé par l'Académie des Beaux-Arts, renouvelant une démarche antérieure de l'Institut de France. Le Gouvernement de la République avait été sollicité de prendre en mains la défense des monuments de Philæ, dont la conservation courait risque d'être mise en péril par le projet de construction d'un barrage sur le fleuve, à Assouan.

Cette importante affaire a été, depuis le début, l'objet de mes constantes préoccupations, et je n'ai pas cessé de la suivre avec une sollicitude attentive. Les derniers renseignements que je viens de recevoir et que j'ai l'honneur de porter à la connaissance de l'Académie lui paraîtront, sans doute, comme à moi, de nature à calmer toutes les inquiétudes.

L'émotion légitime soulevée dans le monde des savants et des artistes par ce projet, les protestations et réclamations présentées de toutes parts, notamment par le Gouvernement français, et, en Égypte même, par la Direction du Service des Antiquités, auraient enfin amené le Gouvernement Égyptien à ne pas poursuivre, pour le moment du moins, l'exécution du plan primitivement adopté. Le Service des Travaux publics offrait en effet récemment au Service des Antiquités de réserver la question jusqu'au jour où, les temples de Philæ se trouvant entièrement déblayés et réparés, le Sous-Secrétaire d'État aux Travaux Publics et le Directeur Général du Service des Antiquités examineront la situation et, d'un commun accord, décideront alors quel parti il y a lieu de prendre.

Il a donc été convenu entre M. Garstin et M. de Morgan que, sous la direction de ce dernier, les monuments de Philæ seraient préalablement dégagés et consolidés, au moyen de crédits spéciaux mis à sa disposition par le Ministère des Travaux Publics. Le danger qui menaçait ces précieux restes de l'Antiquité se trouverait ainsi écarté, et il semblerait qu'aucune difficulté ne dût s'élever à l'avenir entre les deux Administrations. Au reste, les ingénieurs anglais ont eux-mêmes reconnu le préjudice que causerait à leur réputation la construction du barrage. Ne serait-il donc pas permis de supposer que cet arrangement, destiné à ménager certaines susceptibilités, cacherait aussi l'intention d'abandonner le premier projet?

Enfin, M. Garstin y renoncerait sans doute définitivement, lorsqu'en présence des temples de Philæ restaurés et sur les lieux mêmes, il recherchera, avec M. de Morgan une solution qui, tout en favorisant la distribution des eaux du Nil, conserve désormais ces monuments à l'admiration des visiteurs.

Je suis heureux, Monsieur le Secrétaire perpétuel, de vous communiquer les décisions nouvelles du Gouvernement Égyptien, qui réalisent le vœu exprimé par l'Académie.

Agréez, Monsieur le Secrétaire perpétuel, l'assurance de ma haute considération.

Le ministre de l'instruction publique, des beaux-arts et des cultes,

R. POINCARÉ.

The French Minister's letter given above, which is reprinted from *L'Architecture* of the 23rd ult., requires but little comment. It would be, perhaps, rash to assert that the English engineers who advised the Egyptian Government on the subject had recognised the necessity of not submerging the island of Philæ long before the Minister of Public Education in Paris knew anything about the matter; but a few references to the two preceding volumes of this JOURNAL will suffice to show that the British Society for the Preservation of the Monuments of Ancient Egypt had been at work [see Vol. I. p. 608, 23rd August 1894] eleven months before the Académie des Beaux-Arts, whose letter is dated 23rd July 1895, thought fit to move in the matter. Further, Mr. W. E. Garstin's Memorandum upon the modified project for the Philæ-Assouan Dam was published in *The Times* of the 27th November 1894 [Vol. II. p. 77]; and it may be seen from Mr. Somers Clarke's report [Vol. II. p. 535] that more than twelve months ago "the Egyptian Government "pledged itself not to overwhelm the island of "Philæ." One thing, however, is certain: that a reservoir must be constructed either in the Nile itself, or on a site adjacent to its banks, if the progress and prosperity of a large part of Egypt and its population are to be assured—a necessity which was discussed in this JOURNAL by Mr. Cope Whitehouse, of New York, and M. Edouard Naville, of Geneva, in July and August 1894.

Experimental Research in Vienna.

A series of experiments, having for their object the testing of arches of varying degrees of span, and the strength and elasticity of the materials employed in their construction, has been recently carried out in Vienna under the auspices of the Austrian Society of Engineers and Architects. No less a sum than £3,200 was spent on the operations, the whole of which was borne by the Society and a few public-spirited supporters. An exhaustive report on the results of the experiments has been drawn up and published in the *Zeitschrift des Oesterreichischen Ingenieur- und Architekten- Vereines* 1895, Nos. 20-34, which may be consulted in the Library. The report is divided as follows:—(1) Tests of seventeen floor arches with spans of 4·76, 8·86, and 14·76 feet of all kinds of floor construction; (2) tests of two culverts of 32·8 feet span and one-tenth rise; (3) tests of four bridges of 75 feet span, one-fifth rise. Particulars of the foregoing are accompanied with a full record as to deflection and other details. (4) An exhaustive series of tests to determine the strength and elasticity of all materials used in the arches; (5) a theoretical calculation based on the results obtained; (6) conclusion from the results in respect of theory and construction. Having regard to the importance to the building trade of the conclusions brought out in these experiments, the Society are anxious to give the widest publicity to

the report, and announce a reprint in a separate form, which may be obtained for 10s. from the office of the *Zeitschrift*, Vienna I. Eschenbachgasse 9.

Additions to the Library.

Farm Buildings: Their Construction and Arrangement, by A. Dudley Clark, F.S.I., has been presented by the publisher [London: B. T. Batsford]. This is a second and revised edition of a useful work which has been adopted as one of the text-books for the examinations of the Surveyors' Institution. The third edition of *The Law relating to Building, with Precedents of Building Leases and Contracts, and other forms connected with Building and the Statute Law relating to Building, with Notes and Cases under the various Sections*, by his Honour Judge Emden, assisted by Henry Johnston, has been received from the publishers [London: Knight & Co.]. This edition is much shorter than its predecessor, although it contains all the important matter of the second edition with the law brought down to the present date; a result which has been obtained by the author's searching revision of the text, and condensation of the statements of cases therein.

Mr. D. H. S. Cranage has forwarded the second part of his *Architectural Account of the Churches of Shropshire*, dealing with the Hundred of Munslow. This part is bulkier than the former one, and shows some improvement in the matter of photographic illustration. The ground plans of the most important churches have been drawn by Mr. W. Arthur Webb [*A.*], and the plates have been reproduced from photographs specially taken for the work by Mr. Martin J. Harding [Wellington: Hobson & Co.].

The following works have been received from their respective publishers:—*Science and Art Drawing: Complete Geometrical Course, consisting of Plane and Solid Geometry, Orthographic and Isometric Projection, Projection of Shadows, the Principles of Map Projection, Graphic Arithmetic, and Graphic Statics*, by J. Humphrey Spanton, Gold Medallist of the Royal Academy [London: Macmillan & Co.]; and *Notebook on Plane Geometrical Drawing, with a Chapter on Scales, and an Introduction to Graphic Statics*, by Robert Harris, Art Master at St. Paul's School [London: George Bell & Sons].

Mr. T. Mellard Reade [*F.*] has presented the following pamphlets, of which he is the author, the first having been written in conjunction with Mr. T. W. Davies: *Description of the Strata exposed during the Construction of the Seacombe Branch of the Wirral Railway*, reprinted from the *Proceedings* of the Liverpool Geographical Society, 1894–95; *The Moraine of Llyn Cwm Llwch, on the Beacons of Brecon; Note of Further Glacial Striæ at the Quarry, Little Crosby*, also reprinted from the *Proceedings* of the Liverpool Society; *Expansion Theory of Mountain Evolution* and *Pitted Pebbles in the Bunter*, originally contributed to the *Geological Magazine*.

Mr. Henry Frowde, the publisher, has forwarded Part VI. of *Archæologia Oxoniensis*, which contains, among other interesting matter, an additional note by Mr. J. Park Harrison to his article on "The Architecture of the Bodleian Library "and the Old Schools," published in the previous number.

The *Archæological Journal* (vol. lii. No. 2; 2nd series, vol. ii. No. 3) contains a Paper by Mr. Somers Clarke entitled "Philæ: The Nubian "Valley and the Modified Nile Reservoir," and "Notes on Egyptian Colours," by Mr. F. C. J. Spurrell.

The Massachusetts Institute of Technology has forwarded the *Technology Quarterly* (vol. viii. No. 2), and the *Annales* de la Société d'Archéologie de Bruxelles (vol. ix. Part IV.) has been received from the Society. The first part of the twenty-eighth volume of the *Transactions* of the Surveyors' Institution, containing the President's Address, at the opening of the current Session, has been presented by the Institution.

REVIEWS. XXXIV.

(95)

TWO PRACTICAL TREATISES.

Drainage Work and Sanitary Fittings. By William H. Maxwell, Engineer and Surveyor's Offices, Leyton Urban District Council. Reprinted from "The Surveyor and "Municipal and County Engineer." Fcp. 8o. Lond. 1895. *Price* 1s. *net.* [*The St. Bride's Press, Limited*, 24, *Bride Lane, Fleet Street, E.C.*]

Trusses of Wood and Iron. Practical applications of Science in determining the stresses, breaking weights, safe loads, scantlings, and details of construction, with complete working drawings, by William Griffiths, Surveyor, Assistant Master, Tranmere School of Science and Art, 8o. Lond. 1886. *Price* 4s. 6d. [*Crosby Lockwood & Co., 7, Stationers' Hall Court, Ludgate Hill, E.C.*]

The former of these books consists of 74 pages of illustrated notes on drainage and 52 pages of advertisement. The phrase "sanitary fittings" must have been added to the title for the sake of euphony. In the words of the preface—if I may venture to quote them—the book is intended "to "be a handy little book for the use of the young "architect or engineer, who has to design, and the "builder, who now has to execute, the drainage of "his buildings under the closest supervision and "in strict accordance with the most modern "principles, as has been my endeavour herein to "briefly explain."

But the book is better than its preface. Whether, however, there was any need for republishing the

articles in book form is another question: the theme is far from new, and the treatment is slight. The chapters entitled "Various Kinds of Joints "in Drain Pipes," "The Laying of Drains," and "On the Testing of Drains" are, perhaps, the best; but intercepting traps, the disconnection and ventilation of drains, and discharge from sewers are also considered. The author is not quite sure as to the utility of traps. On page 25, after stating that "a continuous current of air should always "be passing through the drains from end to end," he boldly adds, "The principle of trapping is "opposed to this, and therefore is not a good one." On pages 5, 58, and 59, however, he writes as if he had never doubted the correctness of the principle. The same forgetfulness is noticeable in his remarks on Portland cement for drainage works. On page 6 we are told that "the proportions of "cement, or of lime to sand, should not exceed "2½ of clean sharp sand to 1 by measure of "*ground* * Portland cement or lias lime"; while on page 37 we learn that "Portland cement (used "neat) is the proper material for jointing stone-"ware pipes."

Iron pipes are mentioned, but the weights for different diameters are not given. Nothing is said about the different kinds of gullies for receiving the discharge from waste-pipes, &c., or of yard gullies; and, as I have already hinted, sanitary fittings (by which, I suppose, baths, lavatories, sinks of various kinds, and water-closets are meant) are not described in the body of the book, although named in the title. But what can you expect for a shilling? As far as it goes, the book is a good one, and can be recommended to students and builders. It is only a little book, but—there is no padding in it.

My notice of *Trusses of Wood and Iron* must be brief, for the review of a book nine years old comes either too late or too soon: the book has lost the bloom of freshness and novelty, and has not gained the charm of antiquity. Mr. Griffiths' book consists of diagrams, details, calculations, and descriptions of a king-post roof-truss 25 feet span, a king-bolt roof-truss 35 feet span, a collar-beam roof-truss 25 feet span, and a trussed-rafter roof-truss 25 feet span. The plates are excellent, and the calculations and descriptions simple and to the point. The details, I may say, show the usual king-post and collar-beam trusses of wood with iron bolts and straps, a king-bolt truss of wood with iron king- and queen-bolts, &c., and a trussed-rafter truss with wood rafters, wrought-iron tie-rods and truss-rods, and cast-iron struts. It is not the author's fault that wood-and-iron trusses of the nature of the last two are less frequently used nowadays than when his book was written. The theoretical part of the book, however, is still useful, and students will find it a simple guide to the methods of ascertaining graphically the stresses in ordinary roof-trusses.

Manchester. GEORGE L. SUTCLIFFE.

* The italics are mine.—G. L. S.

(96)

BUILDING LAW.

A Handy-book on the Law concerning Owner, Builder, and Architect. By James Walter Smith, Esq., LL.D. (Lond.), B.A. (Oxon.), of the Inner Temple, Barrister-at-Law. Sm. 8o. Lond. 1895. Price 1s. net. [*Effingham Wilson & Co., 11, Royal Exchange, E.C.*]

Light and Air: A Text-book for Architects and Surveyors. Shows in a Tabulated Form what constitutes Ancient Light; How the Right is acquired; How the Right may be jeopardised; How the Right may be lost; Injuries to Ancient Light for which there is no Remedy; Relative Position of Servient and Dominant Owners. Also Methods of estimating Injuries. And further sets forth what the Surveyor of the Dominant Owner will try to prove, and special points to which the Surveyor of Servient Owner should direct his attention, with outline of matters necessary to be remembered in preparing for the Trial. Together with the full Law Reports of the most recent cases on the subject, and illustrated by examples taken from some of the latest cases in which the author has been engaged. Third Edition, revised, with additional cases, &c. With 26 Diagrams. By Banister Fletcher, F.R.I.B.A., Professor of Architecture and Building Construction, King's College, London. Fcp. 8o. Lond. 1895. Price 6s. 6d. [*B. T. Batsford, 94 High Holborn, W.C.*]

This little book is intended to make plain, to any reader who will devote the necessary thought to it, a very complicated and highly technical subject; and if very much which appears in the book is familiar to those whose practice involves fighting out in the Court or in the Arbitration Room the many complex issues which a building contract carries with it, to Mr. James Walter Smith belongs the credit of very tersely and intelligently summing up the general law as it concerns owner, builder and architect.

On page 12 Mr. Smith states that a builder is expected to know the local laws affecting his trade, and this no doubt fixes the primary responsibility on the builder, although, as Mr. Smith adds, it does not necessarily exempt the architect (if any) or the owner from seeing that the local requirements are complied with. A statement on page 13, that "if the house is injured by careless "underpinning, the way blocked *or the light*" (of a neighbour's house) "*impeded* by the new build-"ing, both owner *and builder* are liable," would not, I think, be acquiesced in by a builder; he would very reasonably urge that the law of light and air hardly came within the province of a builder; and that, if it did, perhaps it would become his duty to see that the ground rent was one which would or would not exempt the building owner from future financial loss.

On page 15 I have a personal satisfaction in finding that Mr. Smith, a barrister, says, speaking of the late "Heads of Conditions of Builders'

"Contracts," that they "can hardly be improved "on," and on page 30 he speaks of those same Conditions as that "very excellent contract." So much for the Conditions which we were informed during the recent discussion at the Institute were a subject almost of mirth to a lawyer.

Mr. Smith enters the list with Vitruvius at page 16, in an attempt to define "an architect," but a lawyer-like care distinguishes his description from that of his predecessor. Mr. Smith says an architect is one *who professes* (the italics are mine) "a knowledge of building in general, including "construction, material, sanitation, ornamenta- "tion and Art" (with a capital A), "and must be "able to prepare plans, drawings, specifications "and estimates for the buildings on which he is "engaged, and to superintend their construction "in accordance with the designs." He "also "*professes* to possess some scientific knowledge, "and such legal knowledge, both local and general, "connected with his business as can be expected "of a man who is not a lawyer." And yet I have heard it said that 5 per cent. is an extravagant remuneration for an architect's services! Mr. Smith very properly, however, eases one's mind somewhat when he proceeds: "When I say build- "ing 'in general,' I do not mean that an English "architect is bound to be able to construct a "palace of bamboo suited to a Malay rajah, or to "erect a hall in the style of the Mosque at Cor- "doba, *though he would be proud to do these* "*things if he could*." . . . And he must not "be a stranger to classic architecture or that of "the countries of Western Europe." All this is very refreshing, and architects in general will be grateful to Mr. Smith for thus defining their attributes.

Mr. Smith's remark on page 23, that the architect "must take care that the proposed work does "not apparently interfere with rights of light or "of support," &c., is of service, and the truth of it was illustrated by a case tried two or three years ago, in which a building owner successfully sustained an action against his architect for proceeding with a building which interfered with the light of a window opposite, which interference had led to legal proceedings in which the building owner failed.

Mr. Smith's view (page 24) on the authority of the architect to employ a quantity surveyor is not that usually accepted, and I believe legally accepted. Mr. Smith says that "it is doubtful "whether the architect is, *without express autho-* "*rity*, the agent of the owner to employ a surveyor "to take out the quantities on terms that the "owner is to pay him if the builder does not." The general view is, that where a building owner instructs his architect to go to competition for tenders, the architect is justified in employing a quantity surveyor, because quantities are necessary for obtaining tenders in competition. There can be no doubt, however, that it is far safer and better, not only to obtain the building owner's sanction to the employment of the surveyor, but also to the remuneration which he is to receive.

Mr. Smith makes a statement on page 27 which builders may be glad to take advantage of. He says, speaking of making alterations after the contract is signed: "Indeed, the architect could "not alter the general scheme without the "builder's consent, for to do so would involve a "new contract, written or verbal." This is news to me, and I can scarcely imagine an architect appealing to a builder to give his consent to an alteration of the general scheme of a building the contract for which contained the usual clauses dealing with variations on the contract.

The chapters on "Questions that may arise in "Building" are very interesting, and those on "Arbitrations," which include hints on the taking of evidence, will be found to be exceedingly useful.

There are two important matters dealt with by Mr. Smith which must have cropped up in the practice of most architects, and which it is of considerable moment should be well impressed on the architect's mind. It is usual to insert in building contracts a proviso that no extra will be paid for unless it is the subject of an order in writing from the architect, and we know of many cases where the building owner has taken advantage of this to defraud the builder of payment for work done. Mr. Smith, however, provides a loophole of escape for the honest architect in the following sentence (p. 32): "But if at the end of "the contract"—or, I presume, earlier—"the "architect gives a certificate allowing the work as "an extra, it is, in the absence of fraud, conclusive, "and the owner cannot resist payment on the "ground that there was no order."

The second point has reference to the matters which can be submitted to the referee under an arbitration clause—such, for instance, as that in our old Institute Conditions. Mr. Smith says (p. 34), "For nothing can be submitted to the "referee except the special matters mentioned in "the Arbitration clause, all of which have to do "with the works, 'or any other matter or thing "'arising under or out of the contract.' And a "question of fraud" (Mr. Smith is speaking of fraud or collusion on the part of the architect) "is not such a matter, but involves an importa- "tion of that which vitiates every special con- "tract, and leaves a man to recover what he has "earned independently of the contract." This reminder is useful in cases where it is endeavoured to enlarge the words "or any other "matter or thing, &c.," to embrace any and everything which may arise in connection with the building contract.

There are many other little matters upon which I should like to have commented, but I have, perhaps, said sufficient to convey the idea

which prevails with me, that Mr. Smith's little book should be present on the shelves of every architect's bookcase.

The second book under notice is the third edition of a well-known book, containing all that made it famous, and two or three additional cases. If I felt any desire to demur to Mr. Fletcher's manner of illustrating light and air cases it would be that he has a tendency to complicate his subject by too many angles—*vide* his diagrams on plates 18, 20, and 21. But why should I halt, even to that extent, when in reference to this third edition the Professor himself says—"Surely, "with these added advantages, this must still "continue to be the accepted text-book on the "subject"? *Verbum sap.*

WM. WOODWARD.

(97)

STEREOTOMY.

Practical Masonry: A Guide to the Art of Stone Cutting, comprising the Construction, Setting-out, and Working of Stairs, Circular Work, Arches, Niches, Domes, Pendentives, Vaults, Tracery Windows, &c. For the use of Students, Masons, and other Workmen. By William R. Purchase, Building Inspector to the Town of Hove. With 50 Lithographic Plates, comprising about 400 diagrams. Large 8o. Lond. 1896. Price 7s. 6d. [Crosby Lockwood & Son, 7, Stationers' Hall Court, Ludgate Hill, E.C.]

This work, although only "intended to initiate "young beginners in the craft into the rules and "principles of good masonry," will undoubtedly be found useful to all interested in this important subject, whether theoretically or practically. Most of the examples given are from actual work carried out, the diagrams being carefully drawn, although there may be, in a few instances, some diversity of opinion as to whether the best methods have been adopted in execution. It is certainly a drawback that the geometrical side of some of the problems undertaken is not given more fully; tangents and tangent planes to the curves are not dealt with—these being most useful and frequently essential in accurately obtaining the contour of developments. Again, the properties and generation of the twisted bed joints and other surfaces employed are not explained. Much additional value would have been gained by a more complete elucidation of this branch of the subject, thereby enabling the student, not only to grasp more thoroughly the principles governing developable and other surfaces (frequently indispensable in ascertaining the intersection of one surface by another), but also to apply them in practice to any examples placed before him. The annular vault is touched upon; but the short paragraph given to this problem, describing only the method of finding the plan and development of the groins, is quite insufficient for its setting out and execution.

The book as a whole, however, is a practical treatise on the subject, the author himself having commenced as an operative mason, and afterwards acted as foreman mason on many large and important buildings prior to the attainment of his present position. It should be found of general utility to architectural students and others, as well as to those to whom it is specially addressed.

HERBERT S. WOOD.

NOTES, QUERIES, AND REPLIES.

The Temple of Diana at Ephesus [p. 41].

From EDWARD FALKENER [*Hon. F.*]—

I have read with interest the JOURNAL of the 21st ult. containing the able, learned, and highly interesting account of Dr. Murray's discoveries in studying the remains of the celebrated Temple of Diana which are now deposited in the British Museum. I say discoveries, for discoveries are not confined to the excavating and unearthing of ancient monuments, but include the careful investigation and turning over of the marbles themselves, however ruined; the critical examination of ancient authors relating to the subject; the knowledge and recollection of all the myths and legends of the mythological portion of Lempriere's Dictionary; and an acquaintance with all the architects, painters, and sculptors whose names are mentioned in Sillig's *Dictionary of Ancient Artists*. All this Dr. Murray appears to have at his fingers' ends, and he has brought it to bear upon the subject; and he has thus helped most materially to solve and remove some of the difficulties connected with the restoration of this wonder of the world.

I have never had an opportunity of carefully studying the interesting remains of the temple: my remarks, therefore, must be very cursory. One naturally feels very loth to lose the name of Scopas as connected with this temple. It was apparently introduced by some transcriber who could not make out the meaning of "ex iis "xxxvi cælatæ *una scapo*," and so endeavoured to make sense of it by changing it to *una a Scopa*, and this solution was generally accepted; but Dr. Murray, seeing that the word in the MS. was *scapo* and not "scopa," thought there must be some mistake in the word "una," and so with great acumen hit upon the word *imo*, which could not have been discovered before portions of the sculptured columns had been brought to light. The passage, therefore, reads—"Of the "total number of columns, there were thirty-six "sculptured on the lower part of the shaft." This not only makes sense, but it agrees absolutely with the remains.

An ornamental metal railing enclosing the colonnades of the peristyle is another feature discovered by Dr. Murray.

The absence of the beautiful Ionic base strikes us at first as strange, as it does not conform with

the side columns; but no doubt the sculptor thought that his figures should appear to be standing on the pavement, and, as it were, dancing round the columns.

The elevation of the temple, as given in Mr. Cromar Watt's drawing No. 1, looks very unsatisfactory, for the columns appear to be standing on stilts, being too elongated; but on examining his clever perspective drawing, No. 2, we perceive that it is only the front columns which stand upon the pedestals, and that the stylobate of the end columns is continued to meet these pedestals.

I would venture to suggest that not only the end columns, but all the front columns were connected with the upper platform by a stylobate opposite to each column. Dr. Murray, it is true, believes that all four sides of the pedestals under the front columns were filled with sculpture, and he has endeavoured to determine the subjects of those sculptures, whereas my supposition would militate against the fourth or back portion of the pedestals being sculptured; for only one back portion has been discovered. Referring to this, Dr. Murray says:—"On the fourth side the "sculpture has been entirely defaced." I suggest, therefore, the probability that it never had a fourth side, but that a stylobate started off behind each pedestal; and I consider that a series of such stylobates, enriched with groups of sculpture at the top, possibly of bronze, must have produced a very picturesque and playful feature of this temple, and indeed been one of the causes of its great celebrity and magnificence, whereas this effect would be lost if the ten steps described by Philo continued to the entire width of the temple, and thus insulated the pedestals, and produced the unpleasant effect complained of in the elevation, and destroyed the solidity and oneness of the design. An objection to this arises from the fact that Ward states that the lowest step had a continuity of 100 feet; but this was on the north side, and therefore the objection does not lie. I wish I were young enough to make a drawing of such a disposition of the temple.

There is another solution, however, which I would beg to offer, should the awkward effect of the front columns of the pronaos appearing to stand on stilts be objected to as inconsistent with any other example. It is that these pedestals might have stood on stylobates in front of the columns, between the flights of ten steps, and have been surmounted by statues on circular bases. This appears a more prudent solution, and less in opposition to the principles of Greek art.

As to the increased diameter of the end columns by three inches, this does not seem opposed to what we find in other temples. One-thirtieth is not a large increase.

The coins of Hadrian are very interesting, as they show the columns sculptured on the lower part of the shaft; and they are confirmed by those of Gordian; whereas those of Antoninus Pius are comparatively rude, and show no detail. I may mention that coins are always designed in an arbitrary manner. They do not so much represent the temple, as the deity to whom it was dedicated, and with this purpose the columns are frequently massed together at the sides, in order to allow of a wide space in the middle, in which to place the deity. Thus the coin of the temple is not chiefly to represent the Temple at Ephesus, but "the great goddess Diana, whom all Asia and "the world worshippeth."

The drawings given us by Dr. Murray of portions of the ancient temple which was burnt when Alexander the Great was born are highly interesting as showing that the columns of that temple also were sculptured in the lower part, and that the name of Crœsus was engraved upon one of those which had been presented by him; and we find that in the last and celebrated temple, twenty-seven columns, or seven columns as the case may be, were presented by so many kings; and this is interesting from what we read in the Apocalypse, where our Lord promises that "him that over-"cometh will I make to be a pillar in the temple "of my God. . . . And I will write upon him my "new name." I mention in my *Ephesus and the Temple of Diana** that the custom of presenting columns was very common in Asia Minor, as we see in the Temples of Mylassa, Euromus, and Aphrodisias, where tablets are blocked out for the insertion of an inscription stating by whom the column was presented.

Other difficulties connected with the plan of the temple it is not necessary here to touch upon.

Sixteenth-century Work in India [p. 61].

From WILLIAM H. WHITE [*F.*]—

In the learned review, by Dr. Burgess [*Hon. A.*], C.I.E., of *The Moghul Architecture of Fathpur-Sikri*, the reviewer alluded to the sinister rumour that "Government meditates the early closing of "the Surveys." Members cannot, therefore, too vigorously impress upon the Supreme Council in London that such work as that done by Mr. Edmund W. Smith, at a comparatively small outlay of public money, is a distinct help to Architecture and the arts, not alone in the great Indian Dependency, but throughout the whole British Empire. It was Dr. Burgess who, some six years ago, when he was Director-General of the Archæological Survey of India, set Mr. Smith to measure and draw the beautiful sixteenth-century work at Fathpur-Sikri, urging him to do it exhaustively; and the author of the volume, in his preface, acknowledges the help he received from his former chief. The Archæological Survey of the North-West Provinces is, from an artistic point of view, the most important of all, for no

* 8o. Lond. 1862. In the Library.

other part of India contains so much that is really valuable to the practical architect of to-day than is there to be found. In a review, which I had the honour to write in THE R.I.B.A. JOURNAL [N.S. 19th June 1890], of *The Sharqi Architecture of Jaunpur*, a book of drawings and descriptions similar to that just reviewed by Dr. Burgess, I ventured to enlarge upon the value of such works. Their value to the practical architect consists in the suggestions they supply, and the examples they afford, of structural expedients and of the artistic management of details. Indeed, it cannot be too often dinned into the ears of Secretaries of State that Government is expected to continue this Survey in the North-West Provinces, and to utilise the architectural members of the Survey in controlling a reasonable conservation of historical monuments throughout the whole of India.

THE PRESIDENT'S ADDRESS [p. 12].

The Institute and its Allied Societies.

In his Presidential Address to the Birmingham Architectural Association on the 15th November Mr. William Henman [*F.*] dealt with this subject at considerable length, and referred to Mr. Penrose's suggestion respecting the desirability of increasing the class of Fellows. Mr. Henman expressed his opinion that, if such increase is to be secured, it must be principally from the ranks of non-Metropolital architects; and he proceeded thus:—

The published lists of the Allied Societies indicate that the senior members number 587, of whom only 149 are Fellows of the Royal Institute of British Architects and 100 Associates. Yet in the majority of cases only those who have been in practice some years can be admitted to the senior class. Consequently, as only seven years in practice is necessary to qualify for Fellowship of the Institute, the majority would, on that score, be eligible; but, in addition to senior members of local Societies, there are many able architects practising in the country who have neither joined the local Society nor the Institute.

Take our own district; there are in the Birmingham Architectural Association 41 senior members, of whom 38 have offices in Birmingham, but only 4 of that number are Fellows of the Institute; yet the names and addresses of about 120 architects are given in the directory for Birmingham alone, while our district comprises the five counties of Staffordshire, Shropshire, Warwickshire, Worcestershire, and Herefordshire.

The question arises—Cannot something be done to bring some at least of this large number of practising architects within the ranks of the Institute? I have read through its charter and by-laws, and find that, according to clause 76, "Branches of the Royal Institute may be esta-"blished according to regulations to be made from time to "time by the Council," yet, throughout the KALENDAR there is no other reference to any "branch."

The suggestion, therefore, which I have to make and commend to the favourable consideration of the Institute, yourselves and all the Allied Societies, has reference to the formation of such "branches" of the Royal Institute of British Architects in the larger cities and towns throughout the country, to take the place of the existing Allied Societies, with a view not only of strengthening the Institute itself, but, in addition, to give greater vitality, influence, and scope for usefulness to the local architectural Societies by binding all together in one corporate body. Although I am not prepared with a cut-and-dried scheme for bringing about such an imperial federation of architects, I suggest that the Institute should, as proposed by Mr. Penrose, first obtain the necessary powers to enable architects, with the required qualifications, to be admitted to the class of Fellows without having to undergo the prescribed form of election at present essential, and that the Council should then enter into negotiations with the Allied Societies with the object of transforming them into "branches" of the Institute, provided an adequate number of practising architects of repute in the district are willing to become Fellows of the Royal Institute of British Architects and attach themselves to the local branch.

The branches so formed should then be all placed upon an equal footing as regards their constitution, and might consist of Fellows and Associates of the Royal Institute of British Architects, ordinary members, hon. members, and students.

Additional privileges might be granted as regards representation of the branches upon the Council of the Institute, and the more special business affecting the whole body of architects might, by arrangement, be taken, say, at only four Council meetings during the Session, one of which might with advantage be held in rotation at a branch centre. An adjustment of fees, on a more liberal basis than is at present allowed to the Allied Societies, could readily be made, and as much freedom of action locally as is now enjoyed might still be granted. To encourage the attendance of local representatives at Council Meetings of the Institute, a reasonable allowance for travelling expenses might be made to them. . . .

Having shown that in our Association there are but comparatively few members of the Royal Institute, it may be supposed that in dealing with this subject here it is somewhat out of place and does not concern you. I trust, however, you may not go away with that idea; for many of you are earnestly studying to pass the Examinations in the hope of eventually entering the ranks of the Institute, and I doubt not you will appreciate that honour the more highly if you realise that it is a body of men truly representative of the architectural profession throughout the country, so that, should you ultimately determine to settle down in the provinces, you may rest assured that your interests will by it be safeguarded; and that you may, in connection with your local "branch," render active service in its ranks. For my part, when a Society claims to be representative of a class, I have no belief in its being too exclusive in the sense that, by its methods of election, worthy men are shut out. The state of things which has grown up in the architectural profession cannot in a day be revolutionised. Many who have expressed their ideas respecting the constitution of the Institute appear to me to reverse the order of precedence, and seem to hold the opinion that it is the Institute which is to make the architectural profession, and that its object is to exclude from its ranks all who cannot claim personal acquaintance with some of its members. In this way a number of able men hold themselves aloof—carrying out good work—which is a standing witness that, to be an architect, it is not necessary now to be a member of the Institute. Instead of which I am inclined to think the proper course would have been at first to have opened wide the gates and have admitted all who by their works could show they had made architecture a study, and had, to the extent of their opportunities, successfully practised the art. Then the Institute could have said, Representative as we are now of the architectural profession, we intend, in the interests of the public and the better appreciation of our art, to admit only those to its ranks who prove they are willing, by systematic study, properly to prepare themselves for its practice. . . .

If it is proved that, under the new by-laws, the closing

of the ranks of Fellow has been too precipitate, and I think that is clearly indicated by the figures quoted by Mr. Penrose, surely it is still possible to mark time for awhile. Then, if the Institute is to increase its numbers and extend its usefulness and influence, it must not only invite those to enter its ranks who by their works and actions have proved themselves worthy, but, in my estimation, it is absolutely necessary, before such will in any numbers accept the invitation, that the Institute should consider more closely and carry out more thoroughly the legitimate requirements of the profession beyond the mere confines of the Metropolis. By so doing it may make membership of the Institute a voluntary necessity to all who practise architecture as an art.

The Council of the Institute have under consideration the holding of a meeting of that body at Manchester in the spring of next year, and I have reason to believe that it is still doubtful what form the meeting will assume. I therefore humbly suggest that it should be a general conference of the Institute with the Allied Societies for the purpose of taking into consideration the desirability of drawing still closer the bonds of union. Diversity of views I quite expect there will be upon this subject; but now that the necessity has been shown for strengthening the Institute by increasing the number of Fellows, it seems to me a favourable opportunity for expressing opinions upon the larger subject. I feel sure that a free and open discussion thereof, even if it fail to bring about the full measure of union which I advocate, will certainly not be devoid of some useful purpose.

It is affirmed that the Councils of some of the Allied Societies have passed resolutions in support of the views to which Mr. William Henman has given utterance. There can be no doubt that the section of Mr. Penrose's Presidential Address, entitled "The Class of Fellows: an Appeal and "a Suggestion" [pp. 12-14], has aroused throughout the country a desire for greater and more practical union in the profession than at present exists. In fact, there is even enthusiasm. The mere intimation, made at the Annual Dinner of the Manchester Society on the 22nd November, that the Institute wished to hold a Meeting, to be followed, perhaps, by a Dinner, at Manchester, during the coming year, was caught up with alacrity by the Presidents of other Allied Societies, who urged that each Society in turn might have a visit from the Metropolitan Corporate Body.

The Sheffield Society.

At a meeting, held 30th November, of the Council of the Sheffield Society of Architects and Surveyors a resolution was passed to the effect that they would be willing to consider any tangible scheme for rendering the Royal Institute of British Architects more useful to the profession, more influential generally, and more representative of non-Metropolitan architects, than—though the resolution does not say so in words—it is at present.

As the matter is now occupying the attention of the Council of the Institute, it may be desirable for other Allied Societies to send in communications on the subject, if they have any to make, without delay.

MINUTES. III.

At the Third General Meeting (Business) of the Session, held Monday, 2nd December 1895, at 8 p.m., Mr. Alex. Graham, F.S.A., *Vice-President*, in the Chair, with 22 Fellows (including 11 members of the Council) and 15 Associates, the Minutes of the Meeting held 18th November 1895 [p. 70] were taken as read and signed as correct.

A list of donations to the Library [see *Supplement*] was taken as read, and an expression of the thanks of the Institute to the several donors was ordered to be entered on the Minutes.

The following Fellow, attending for the first time since his election, having been formally admitted, signed the Register—namely, Silvanus Trevail (Truro).

The Hon. Secretary announced the results of the Preliminary Examination held in London, Liverpool, and Newcastle, on the 12th and 13th November 1895, and read the names and addresses of 96 gentlemen who had passed and been registered as Probationers [p. 80].

The following candidates for membership in the various classes were elected by show of hands, under By-law 9, namely—

As Fellows (5).

HARRY WILLIAM ROBERTS (Leicester).
CHARLES THOMAS MILES (Bournemouth).
GEORGE HUBBARD (*Qualified as Associate* 1894).
HERBERT OSBORN CRISWELL (*Qualified as Associate* 1886).
HERBERT HUNTLY-GORDON (*Qualified as Associate* 1888).

As Associates (25).

FREDERICK WILLIAM PETTER (*Qualified* 1895), Barnstaple.
CHARLES KAY MAYOR (*Qualified* 1895), Manchester.
CECIL ALEXANDER SHARP (*Qualified* 1895).
HERBERT STORY (*Qualified* 1895), Birkenhead.
WILLIAM HAWKE (*Qualified* 1894).
EDWARD GREENOP (*Qualified* 1895).
FRANCIS EDWARD MORRIS (*Qualified* 1895), Reading.
PERCY LEEDS (*Probationer* 1892, *Qualified* 1895).
GEORGE GILBERT IRVINE (*Qualified* 1894).
HARRY HUTT (*Qualified* 1895), Reading.
HARRY GARNHAM WATKINS (*Probationer* 1891, *Student* 1893, *Qualified* 1895), Lincoln.
ROBERT SAXTON BESANT (*Qualified* 1895).
ALFRED JOHN DUNN (*Qualified* 1895, *Pugin Student* 1895), Birmingham.
JAMES ALFRED ERNEST LOFTHOUSE (*Qualified* 1895), Middlesbrough.
GEORGE COWAN (*Qualified* 1895), Portsmouth.
GEORGE JOHN THRIFT REAVELL (*Qualified* 1895).
WILLIAM CHARLES WAYMOUTH (*Probationer* 1889, *Student* 1891, *Arthur Cates A.A. Scholar* 1892, *Qualified* 1895).
CHRISTOPHER MITCHELL SHINER (*Qualified* 1895).
FRANK BROOKHOUSE DUNKERLEY (*Probationer* 1889, *Student* 1892, *Qualified* 1894), Manchester.

STANLEY WILLIAM WORTH DELVES (*Probationer* 1890, *Student* 1893, *Qualified* 1895), Tunbridge Wells.
EDWARD GEORGE COLLINS (*Qualified* 1895).
EDWARD PENFOLD (*Qualified* 1895), Reigate.
ORLANDO MIDDLETON (*Probationer* 1890, *Student* 1891, *Qualified* 1895), Cheltenham.
ROBERT MESSENGER (*Qualified* 1895).
JAMES HEWITSON SHAW (*Qualified* 1895).

As Hon. Fellows (2).

EDWARD FALKENER (St. Clears).
SIR FREDERIC LEIGHTON [*H.A.*], Bart. (*Royal Gold Medallist* 1894).

As Hon. Corr. Members (3).

PROFESSOR VICTOR SCHRÖTER (St. Petersburg).
HERMANN JOSEF STÜBBEN (Cologne).
FRIEDRICH CARL HEIMANN (Cologne).

A selection of Professor Schröter's drawings, kindly lent by Mr. E. O. Sachs, was exhibited during the evening.

Mr. G. A. T. Middleton [*A.*] having drawn attention to certain anomalies existing in the Papers set at the Intermediate and Final Examinations as now conducted, a discussion ensued [see Appendix].

The proceedings having thus terminated, the Meeting separated at 9.30 p.m.

Appendix: Examination Papers.

MR. G. A. T. MIDDLETON [*A.*] said that when he had given notice to the Council of his intention to speak at that meeting on the Papers set at the Intermediate and Final Examinations, he had been asked to define the anomalies to which he desired to draw attention, and he had done so in the following words: "(1.) That whereas "the majority of the Papers set are such as to lead a "student to sound preparation, yet others, particularly "those upon Land Surveying and Stresses, and to a lesser "extent those upon Materials also, are conducive to verbal "cramming of a most unsatisfactory description. (2.) "That the Papers set upon the subject of stresses in both "the Intermediate and Final Examinations cover practically the same ground, that set in the Final demanding "no higher knowledge than that set in the Intermediate."

They all admired the self-sacrifice of the gentlemen who devoted so large a portion of their time, without any return, to the very thankless task of conducting the Examinations held by the Institute. While he had noticed certain anomalies for some time past, he had hoped that they would be removed at the change of the Examination. But now that the new scheme was in force the same thing seemed to recur, and he found it his duty reluctantly to draw attention to it at that meeting, when no reporters were present and only members were allowed in the room. The chief objection was that certain of the papers led to cramming. It had often been said that that was the very thing the Institute, as a body, would most deprecate, and he fully agreed with it. There was nothing more objectionable than to be asked, as he had been asked again and again by students, to teach them how to answer the questions set in certain papers—not to teach them the subject, but how to answer certain questions. That was mainly the task he had set himself: to prove to the Meeting that there were papers which led to that cramming—which led men to learn by rote figures and facts and formulæ, and not to understand the subject really. He also said in his letter to the Council that he intended to criticise the papers set on those subjects in detail. He need not go further back than the papers set last March. He would first take one of those to which there was the least objection, that in the Intermediate: No. V. "The "nature of ordinary building materials: their qualities "and defects." Here there were twenty-four questions set, one hour given to do them in, average two minutes and a half per question. That, he thought, was a great deal more than it was possible for a man to do, and yet there was no note to say that the candidate was to limit the number of questions—presumably he was supposed to take the whole twenty-four. Of those questions, again, there were several to which objection could be taken. One of the principal maxims relating to examination papers was that every question should be self-contained. That was not the case with Nos. 2, 9, 12, 14, and 19. No. 2 was, "Which are "the best, and those to be avoided in proper work?" He did not think many people, taking that question as it stood, could answer it. It referred back, of course, to question No. 1. Then question 9 was, "What precautions are taken "to keep out drift snow?" That referred to the heading "Slates, tiles." Question 12 was, "Why are the middle "beds better for use than the upper and lower?" That referred back naturally to question 11, which related to Bath stone. Question 14 was, "State how the finished "face on each is obtained, and what is understood as "'tooled face' and 'polished face.'" Now, question 13, which one would think question 14 referred to, was, "What are the defects to be looked for in Yorkshire sand-"stones?" Did question 14 mean that on each of the Yorkshire sandstones the candidate had to state how the finished face was obtained; or did it refer to Yorkshire sandstone and the Bath stone mentioned in question 11? Question 19 was, "Describe the faults of the above-men-"tioned timbers." Now question 18, to which that would naturally refer, was "What do you understand by battens, "deals, planks, baulk timber?" It was curious that a candidate should be asked to describe the faults of timbers called "battens, deals, planks, and baulk timber." He supposed it referred back really to question 17, and not question 18. Now, all those things were exceedingly confusing to students. But they were comparatively small matters. Similarly, the papers upon the same subject set in the Final Examination afforded opportunity for cramming. There were ten questions there, but those questions were such as could be prepared for out of a particular book, Vol. III. of Rivington's *Building Construction*—they went no further. That book was written some eighteen or twenty years ago, and it was considerably out of date in many ways; it was in many respects inaccurate; and yet the questions dealt with that book only. They did not deal with materials in a practical way at all. That paper was in marked contrast to the paper upon the Principles of Construction which followed, which demanded an intimate acquaintance with constructional methods. That could not be answered by any man by study or cramming from any particular book. But in the Final Examination they wanted to get at the man's knowledge of materials actually, not what he had read; and a slight alteration in the papers set in the Final Examination would overcome that. Elementary knowledge taken from text-books should not be so valuable. Turning to the paper on Land Surveying, set for the Intermediate Examination, he was sorry to say it was a very bad paper, not only that set in the present year, but almost invariably. It was open to question whether land surveying in its full sense should be taken in an architects' examination—whether they could not deal with it just superficially, to enable a man to survey the plot upon which his building was to be placed, and small things of that kind. But assuming that it was reasonable to expect candidates for the Intermediate Examination to have a thorough knowledge of land surveying, it was still an unsatisfactory paper. The first question was one upon cross staff surveying, a system of surveying which he did not think was in use by any surveyor who really knew his business at all. It was in use, he knew, many years ago. Taking the offsets in the first question, one was 652—that was too long for accuracy. The other was 545, which was

also a great deal too long for accuracy. They could not possibly set up their perpendiculars to the point aimed at with any chance of being right, or even approximately right; it was an inaccurate system of surveying. Also there was no scale given in the question. The candidate was asked, "From the following notes plan and find the "contents of a field"—there was no scale, and for a survey some definite scale should be stated. Another thing: it was not stated whether those distances were in links or in feet. He would not speak of any other units, but both links and feet were in common use; many architects worked with 100-foot chains; others worked with 100-link chains. A man might come from an office where a 100-foot chain was in constant use, and, finding the contents of the field in feet, be judged wrong; or he might come from another office where link chains were used, and again be judged wrong: according to whether the examiner had set the question in chains or in feet. But he was afraid there was something worse still in the question. The papers seemed based on a book written a great many years ago, published in Weale's Series, Baker's *Land Surveying*. He found that question absolutely figure for figure on page 19 of Baker's *Land Surveying*, in example 3 given on that page. He did not think they could have any greater inducement to cramming than having questions set exactly as they appeared in certain text-books. Surely it must lead to those text-books being bought and studied, being crammed and got up almost by rote! And it had happened before: his attention was called to it some two or three years ago by a student who discovered it in the examination. Questions 2 and 3 of Paper No. IX. were upon the computing scale, and upon the variation of the compass. Neither of those was a thing with which architects had anything to do in ordinary practice. They were quite outside the ordinary architect's needs; they would be all very well in a paper set, say, at the Surveyors' Institution. Question 5 was, "Lay down the plan and find the area from following "notes." Again no units were stated, and no scales stated, and there was no sketching on the side to show to what the offsets were taken. What would happen if there were two or three offsets on either side of the line he did not know. One must sketch in one's boundaries and what was happening on either side if one was to show it properly in a land survey. This was a theodolite survey, but the angles were given in single minutes; and as it had to be protracted it was almost impossible to do it with accuracy; accuracy could not be obtained, in fact, by protracting, and yet he presumed the angles were to be so plotted. In order to work out a theodolite survey with any degree of approximate accuracy one must go to trigonometry, one must solve triangles if possible—and there were no trigonometrical triangles set down in this problem to solve; or one must reduce the angles to the meridian and work by traversing; and, as he believed, very few architects understood traversing. It necessitated the use of traverse tables, and those were rather difficult to obtain – at least good traverse tables, which went down, as was intended in the question, to single minutes of arc and to single links of distance. Question 6 was, "Lay out 6¼ acres in a rectangle the "length and breadth of which shall be as 5 to 2." No scale was given, so it was to be presumed that the 6¼ acres was to be laid out full size in the examination room. Or, to take it the other way, the candidate may take any scale he liked; under which circumstance it was only necessary to set out a rectangle 5 inches by 2 inches, which to some scale or other (it did not seem to matter what) would represent 6¼ acres. He did not think even that way put it was a reasonable question. The last question was upon levelling, and to the last two columns there could be no objection—there was a clear statement, so that it would be possible to plot from what was given. But the examiner had omitted the usual intermediate sights. On a survey with those distances, in all probability, there would be plenty of intermediate sights between the back and fore sights; but he had not much to say upon that. The great objection was that they would find the first seven lines of the first two columns were the same identically as those given on page 148 of Baker's *Land Surveying*; and they would find the other figures of those same two columns also on that same page, but slightly altered in sequence. After that it was somewhat of a relief to turn to another paper, the paper upon the Strength of Materials, which was to be found on page 245 of the KALENDAR. The first question was, "A beam 20 feet span in the clear is loaded at three "points—at one point with 6 tons, at the second with "8 tons, and at the third with 10 tons. The first point is "5 feet from one end of the beam, the second point is "7 feet from the same end of the beam, and the third "point is 8 feet from the other end of the beam. Calculate "the equivalent weight at the centre of the beam." Now, there was no one equivalent weight which could be placed at the centre which was equivalent to three weights placed at three different spots; there was a weight at the centre which would produce the same maximum bending moment; there was a weight at the centre which would produce the same bending movement at any given spot; and there was a weight at the centre which would produce the same reaction as the supports; but it was different from either of the other two weights. There was no one weight at the centre which would produce the same shears. What presumably was required was the weight at the centre which would produce the same maximum bending moment; and, so stated, the question would be a satisfactory one, although a somewhat severe one, which would be better set, he would suggest, in the Final than in the Intermediate Examination. The next two questions stated certain formulæ, and left them to be worked out. They were arithmetical puzzles; they did not in the least decide whether the candidate had a knowledge of what had led to those formulæ, and how they had been arrived at, or any argument which could lead up to them; they simply gave those formulæ and left them as puzzles to be worked out. He thought that a schoolboy, if he looked through them carefully, would be able to work them out. Going back to 1882, when he himself sat for examination, he was then ignorant entirely of this particular subject, but the questions set were just these arithmetical puzzles, and being a fair arithmetician, he was able to solve them without any difficulty, although he knew nothing whatever of the subject. He believed that had been the case since with others. In question 4 a formula was stated for steel joists. Now why not, in flanged structures, induce candidates to equate the stress and bending moments? It was the reasonable and proper method to do, and was the method invariably adopted by engineers. Why throw them back upon formulæ that they had to learn by rote and simply puzzle out as they would a conundrum? It was that kind of thing that students came and asked to be taught how to do; and, after the examination was over, they did not care a bit: they forgot all about it. Question 5 was, "What weight would be safely carried by a detached "brick pier 2 feet 3 inches wide by four bricks thick, "assuming the safe weight per foot super to be 8 tons?" A schoolboy of 14 ought to be able to do that. It was a simple sum in arithmetic. Question 6 was, "Give the "reciprocal diagram for a king-post truss." Certain letters were shown, but no scale was stated either referring to the diagram or to the loads, nor were the loads given. It was not even stated whether it was to be taken for dead load only, or for wind pressure also; it was simply left entirely to the student's imagination. It was the same with the Paper on the same subject in the Final Examination. In substance that paper was identical with the paper set in the Intermediate Examinations; it was no more severe; it covered no more ground, but was just the

same. In the first three questions formulæ were given and had to be worked out. Questions 4 and 5 were arithmetical puzzles again; the candidate simply had to find the sizes from the data given. In question 6 there was another stress diagram without scale, and without the load stated; it was an ordinary truss, with the exception that, as a rule, they found struts placed in it, but it was theoretically a correct truss. Again, he repeated, two papers upon stresses and the paper upon Land Surveying were such as to lead students to learn by rote, and to try to worry out formulæ instead of learning and knowing their subject. The Chairman of the Board of Examiners had written him a little while ago as follows: "Some day I look forward to the possibility of strengthening the questions in the Final to which you object; but, alas! the crass and lamentable ignorance of the bulk of our candidates on the subject you refer to will make it of necessity a gradual progress." It had been so gradual that there had been no progress for some thirteen years. As to the "crass and lamentable ignorance," he did not find it with students. He found that, reasonably taught, upon proper lines, architectural students could understand stresses, which was the subject the Chairman evidently referred to, quite as well as any other students; though some few, of course, were not able to grasp it. They had a paper on Physics in the Intermediate Examination, in which a student was expected to have some acquaintance with the ordinary laws of statics, and, as the subject of stresses was only a particular branch of statics, he had thus a basis upon which to build up better and further knowledge. In the last Examination, he understood, the papers set in Physics had all been upon hydraulics or upon electricity, and none upon statics; but upon other occasions there had been questions upon statics, and statics had had to be mastered. If a man could master statics he could go forward, at any rate to a moderate understanding of stresses, for a moderate paper in the Intermediate; and, again, by the time the Final Examination came round, if he had anything in him, he ought to be able to go forward still further, and obtain a thoroughly sound mastery of the subject. Some would say that a thorough mastery of statics was not necessary to an architect, that it was rather a subject for engineers; but as they had papers in the Intermediate and Final Examinations on the same subject, surely the papers in the Final should be more severe and demand a wider range of knowledge than those in the Intermediate! Either that, or omit the paper from the Final altogether, which, perhaps, was the proper course to adopt. In the paper on Land Surveying all that was necessary was to set such a paper as would demand a certain practical acquaintance with instruments, and a certain practical knowledge acquired in the field, not from the study of text-books thirty or forty years old.

MR. JOHN SLATER [*F.*], B.A., said that although for the last year or two he had taken no practical part in the Examinations, he should like to make one or two observations with regard to Mr. Middleton's criticisms. He was quite sure that the Board of Examiners, from the Chairman downwards, would be only too pleased to receive any criticism on their papers submitted by Mr. Middleton. It was, however, the easiest possible thing to criticise a paper, but a very difficult thing to set one. It was most difficult for a person who had to set one or two papers a year to vary those questions, and have regard to the proper proportion between the difficulty of a paper in the Intermediate Examination and of one in the Final Examination. One of Mr. Middleton's great points was that some of the questions led to cramming. He defied any one to set a series of examination papers on any subject and not to give an opportunity to a clever crammer, or clever teacher of the various subjects treated in the Examinations—such as, he was quite sure, Mr. Middleton was—of finding the means of answering them. It had been found over and over again at the Universities that, no matter what the subject, if he looked over a series of papers, a clever man would find out the sort of questions that recurred over and over again, and he would be able to give his students data and facilities for answering them. He fully concurred with what Mr. Middleton had said as to the desirability of setting questions that required practical knowledge of the various subjects. It was impossible, however, to go on setting those questions without giving a certain amount of book-work, and that book-work students could get up. He quite agreed with Mr. Middleton that it was a very undesirable thing to take certain diagrams out of text-books and set them for this examination; and, now that Mr. Middleton had drawn attention to it, he felt quite sure that the Board would look more closely upon the questions that were set on those subjects, and, if they found they were taken *ipsissimis verbis* from the various text-books, it would be most desirable indeed to have them altered. But no one could possibly appreciate the difficulty that the Board of Examiners had when questions were brought before them; and there was a great deal of routine matter to be considered in going into the questions seriatim. The fault undoubtedly was this: they had to conduct examinations, and they had to set questions on a number of different subjects, and they had people to do that who gave voluntarily an enormous amount of time, but who could not possibly give to the matter the time which a really good paper demanded, because they were unpaid. That was the great blot on the Examinations, and he looked forward to the time when they should have funds sufficient to pay the examiners a proper honorarium for the trouble they took in setting the questions. He was sure that the examiners in the subjects mentioned would be only too grateful to Mr. Middleton for having pointed out these anomalies. He agreed with him that the Final Examination ought to be more difficult than the Intermediate, and he was sure it was the desire of the Board to make it so. But again the difficulty presented itself, how to set the questions, and how to vary them, and increase the difficulty in the various stages of examination. Mr. Middleton had the experience, that very many of the examiners did not have, of preparing students for examination, and any one who prepared students for an examination could find out, more easily than any one else, the faults of a paper, and the way in which they could be rectified. Possibly if they could have teachers to set the various questions they would know how to "circumvent" the students. Perhaps the present examiners did not quite know how to "circumvent" the students; but he was certain that, whatever happened, they would not know how to "circumvent" the crammers. He repeated, however, that the Board of Examiners had only one object, namely, to make the Examinations test examinations so far as they could; and he would ask the meeting to note that Mr. Middleton's remarks only applied to about two-fifths of the Examinations. If with his experience of the candidates who came up for examination he could only criticise a small portion of the papers, he thought it good proof that, as a whole, the Examinations had not been so badly conducted as he apparently wished them to believe.

MR. LEWIS SOLOMON [*F.*] said he did not at all agree with what Mr. Middleton had said. When he started the discussion he was in hopes he would take a much broader ground than he had done—that he would not take details so much, but the general scope of the Examination. Mr. Middleton found fault with three things so far as his (the speaker's) part in the Examinations was concerned, and he would simply take those points, leaving the other gentlemen who had been attacked to answer for their own papers. They must remember that the object of the Examinations was not the same as that of the Law Society or for the Civil Service. If a youth did not pass the Examinations of the Law Society he could not be a lawyer;

if he did not pass the Civil Service examinations he could not enter the Civil Service; but a candidate in the Institute Examinations was on a totally different ground—he could practise just the same if he were plucked twenty times. So what they had to consider was, not to look upon him entirely as a student who had learnt up certain things, but to see that he was capable of answering the questions as a man of practice. Some of the questions Mr. Middleton found fault with because they were not exactly on questions of moment, but rather, as he called them, puzzles in figures, but which he (the speaker) called questions which occurred in everyday practice in an ordinary architect's work—for instance, the strength of a beam intended to carry a certain weight: every architect had to do that in his young days, even if he did not do it in later years, but left it to his manager. In his own office he had to calculate the weights of beams and girders very often. Again, they had to consider that the candidates were not necessarily students to be plucked if they could not answer ordinary questions and problems. Many candidates were long past their youth, and it would be ridiculous to pluck a capable man of some fifty years because he could not answer questions of formulæ. So the questions that he set were very often, "Give the "scantling of a beam that you would put up in a certain "place." Such a man as he had mentioned would not bother to work out formulæ; he knew from experience what were the details; and that was what they considered—not the testing of a student, but the knowledge of a practical man.—Mr. Solomon then replied seriatim to the various criticisms of Mr. Middleton upon the questions set in the papers for which he was responsible, and proceeded: Another complaint made by Mr. Middleton was that the Intermediate and the Final Examinations followed the same ground. Lately they had been going in for stress diagrams—he would take that as an example. Two years ago not one candidate in twenty could answer a question on graphic statics or reciprocal diagrams. When the Intermediate Examination was started he found that whether they were taught in London by teachers, or whether they worked up for the Examination by themselves, not one in twenty candidates understood a bit about the subject. What was the result? He showed them how to set to work in the few moments of the Oral Examination, and the result had been this: two years ago not one in twenty could answer; a year ago two did answer, and at the last Final Examination every candidate got more than half marks, and out of the number certainly the average was 80 per cent. of marks, showing that the candidates had benefited by the Intermediate Examination, and that at the Final Examination they were able to answer the questions that they could not have attempted before. Only this morning he had a letter from one of the candidates, whom he had admonished pretty severely last time, who said, "I must beg you to excuse my "poor expressions of thanks, as my gratitude to you is "such as must be felt, not expressed in words." Now, if a candidate who had been relegated wrote like that, one must think that the Examination was doing good. From what he had written along with the letter he showed too that he was able to answer the questions that he could barely attempt during the Examination. Mr. Middleton seemed to omit all reference to the *viva voce* part of the Examinations. The papers set were not perfect, but in the *viva voce* the examiners could find out the weaknesses of the candidates. Where they just scraped through by cramming, the examiners were quickly able to find it out; and they were able to help those who from nervousness did not quite grasp the question at first sight. He thought it would have been much better if Mr. Middleton had accepted Mr. Arthur Cates's offer or his own, and had seen either Mr. Cates or himself with regard to the questions, instead of speaking as he had done at that meeting. He himself had offered to meet him, and learn his views on the matter, and, if possible, to adopt them in setting papers for future Examinations. Mr. Middleton had thought fit not to accept the offer; probably he thought it was for the good of the Institute. That, however, he (the speaker) was disposed to doubt. If he had had the interest of the Institute at heart he would have accepted the offer made to him, and pointed out the defects he found fault with, and they might have been remedied in a future paper for the benefit of the whole body.

Mr. H. D. SEARLES-WOOD [*F.*] said that Mr. Middleton had questioned the paper on Materials in the Final Examination, and said that the whole of the answers could be obtained from the third volume of Rivington. He begged leave to say that he did not possess a copy of Rivington, and he did not consult it when he wrote the questions; but, inasmuch as that work dealt entirely with the subject upon which the paper was based, it was a little difficult for an examiner to go away from the book; and all the answers which came in, which were merely taken literally from the book, were marked down accordingly. In the *viva voce* part of the Examination he always endeavoured, as an examiner, to get at the practical experience of the candidate, if possible. With regard to the Physics subject in the Intermediate Examination, Mr. Middleton made a passing allusion to the fact that in the last Examination he had dwelt entirely upon hydrostatics and electricity. Physics, of course, related to a very large subject, and it was difficult to embrace the whole of physics in one paper; so that he generally tried to divide them. But Mr. Middleton would agree that they had given statical questions in previous years, and he (the speaker) hoped, if he lived, and had anything to do with the Examinations, to do so again. But there was a particular note in the book in which those papers were recorded, requesting the examiner to direct his attention rather more to the subjects of heat and electricity, and that was the reason why the statical part of the question had been departed from in a few instances. With regard to the paper on land surveying, Mr. Middleton was more severe upon that than upon any other. The only defence he (the speaker) could offer was that, as a rule, the candidates had no preparation whatever in land surveying, and that the book which was taken, Baker's book, was one which had been recognised as a standard book for a great many years. The reason he had in one or two instances taken the actual diagrams from that book was that he was anxious to have a form which was a settled form to a certain extent; because, if one gave one's own field notes, one almost always had a personal equation, and a candidate might say, "In our office "we are not in the habit of keeping our field notes in that "way." With regard to the first question, whether the figures were in links or in chains, he thought it must be obvious to anybody who looked at the paper that they were links; but in case any candidates made a mistake and answered the question in feet, they would be credited with their answer if it was right.

Mr. J. TAVENOR PERRY [*A.*] thought that a much more important and a much more profitable subject, which was absolutely necessary for practising architects—quantity surveying—should be made a subject of examination.

The CHAIRMAN said that they were obliged to Mr. Middleton for having brought the matter before them. There were many points he had referred to which, no doubt, deserved the attention of the Board of Examiners. But with regard to cramming, Mr. Middleton must be aware that it was impossible to avoid it; any University examiner would confirm him in that. Speaking for himself, for the small part he had taken for many years in the Institute Examinations, he might say that the great difficulty was to avoid putting questions that could not be easily answered from such text-books as Gwilt and Fer-

gusson. The better part of the Examination Mr. Middleton had not referred to at all; that, as Mr. Solomon had pointed out, was the oral examination. The oral examination, in his (the Chairman's) opinion, was the great test. One fault, perhaps, to be found with their Examinations was that they did not give sufficient time to the *viva voce* part of the work. He had known many instances where a candidate would almost fail, from nervousness or other cause, in answering the questions on paper satisfactorily; but, when the examiners sat down to talk to him in a friendly way, and tried to get at the amount of knowledge he really possessed, it was found that he answered the questions and showed such an amount of knowledge as would, when he was writing his paper, have enabled him to answer nearly every question quite satisfactorily. That was a very important part of the Examinations, which had grown in value very much in recent years.

PROCEEDINGS OF ALLIED SOCIETIES.

THE MANCHESTER SOCIETY.

Board-School Planning. By Charles Henry Wyatt, Clerk of the Manchester School Board.

Read 3rd December 1895.

Introductory.—I must preface what I have to say with something in the nature of an apology for having had the hardihood to accept the invitation so kindly conveyed to me through your Secretary that I should read a Paper on the Planning of Board Schools. Of course, as many of you know, I am not an architect, and I do not pretend to be a master of the many technicalities which are necessary for the man who would successfully design a public elementary school. The views which I shall lay before you are based on a practical acquaintance with school life, and on any experience that I may have acquired during the time that I have had a more or less intimate acquaintance with the working of public elementary schools in this city. I do not propose to deal with the rules and requirements of the Education Department, except in so far as they may be included in what I have to say on the details of the provision of the necessary accommodation and adjuncts of schools seeking to be recognised by the Education Department as part of the elementary school provision of a district.

Site.—The first necessity for a school is, of course, a suitable site, and this, particularly in large towns, is sometimes a difficult matter. It has often struck me in reading the criticisms of the architect of the Education Department, particularly upon the lighting of schools, that many of these criticisms would be of extreme value if the school had to be erected, say, in the middle of an American prairie; but contending, as we frequently have to do in the case of town sites, with rights of light, high neighbouring buildings, access from streets, and a variety of circumstances over which we have no control, it does seem to me that it would be a good thing if the official architect would, in criticising plans, take into account the environment of the proposed school. Presuming, for the sake of my statement, that you have a fairly good piece of land, an acre or an acre and a quarter in extent, upon which you propose to erect a school—say for 1,000 or 1,200 children—I will treat first of the method of dealing with the site.

A plot of land of the size I have mentioned will give ample playgrounds for the children; consequently there will be no necessity to consider the matter of roof playgrounds, or any utilisation of possible basement space to extend the playground. I think it an essential matter that the main front of the building should, if possible, face the south, and I would so arrange that the school itself should stand as far as possible from the main thoroughfare giving access to the school premises. This would, of course, mean that the greater part of the playgrounds would be in front of the school. There should, of course, be space at the back, not only for the necessary latrines and offices, but also for a reasonable distance between the main buildings and these appurtenances. At one corner of the site, preferably at the front, I would place the caretaker's house, so arranged that he could from his windows overlook the greater part of the playgrounds. The site should be fenced by a dwarf wall on which should be placed an unclimbable iron fence. The necessary division of the playgrounds into two parts, for the girls and infants and for the boys, should be by means of another unclimbable fence running down from the centre of the building to the centre of the boundary wall, there being, of course, a like division at the back for the separation of the offices. The best surface for the playground that I have seen is that known in Scotland as "Granolithic" pavement. Asphalt playgrounds are common in England, but care should be taken that the ground has been allowed to settle before the asphalt is put upon the surface, and the work should be thoroughly well carried out under a rigorous specification giving the thickness of the various ingredients which compose the asphalt. I believe that at Bolton the playgrounds are flagged, and I have it on the authority of the members of that Board that the method is satisfactory. Certainly it would be most lasting, but I must say that a Yorkshire flag is rather a hard thing for a child to fall on.

Having now placed our school on the block plan, let us consider the question of its internal arrangements. Presuming that it is an ordinary public elementary school, say for 1,200 children, and that it is in two departments—one for infants on the ground floor with accommodation for about 400 at 8 or 9 square feet per child, and a first floor with accommodation for a mixed department of 800 children, or for two separate departments for boys and girls each providing for 400—and presuming also that each floor has a central hall, we will first consider the question of a basement.

Basement of School.—Of course the ideal limit of the cost of erecting a public elementary school is that fixed by the Education Department for the purpose of the loan, and, unless there are exceptional circumstances, this is fixed at £10 per head. Some school boards, however, do not go to quite this limit. In Manchester £9 per head is thought to be sufficient to cover the cost of erection and equipment of an ordinary public elementary school. Having this limit of cost in view, together with the provision of extensive playgrounds, boundary walls, offices, &c., any one with the most elementary knowledge of the cost of school erection will admit that such a limit of expenditure does not provide for any extensive basement. You should, however, I think, have in the basement a kitchen for the caretaker—a room sufficient to hold at least twenty benches designed for manual instruction in woodwork—and in the case of a school in a poor locality, where through private munificence free meals are provided for necessitous children, it is almost a necessity to have a roomy apartment where these meals can be served.

Ground Floor of School.—On the ground floor we have the infants' school. The central hall on this floor would be lighted from the ends, and would also receive a certain amount of light from the glass partitions dividing the class-rooms from the hall. It is very essential that there should be direct access from this central hall to all the class-rooms, so as to enable the principal teacher, by the sound of a gong, to summon the whole of the children into the hall, for any united service in which they may have to take part, the school being also assembled and dismissed from the central hall. Access from corridors is very objectionable. The class-rooms themselves would line two sides of the hall. In the apportionment of accommodation which I have before given there is, of course, the difficulty that if on the ground floor you accommodate 400 infants you must arrange that some part of the 800 in the senior department shall find accommodation also on

the lower floor. There is, however, no practical difficulty in this, because a few class-rooms on one side of the ground floor may well be used for the lower standards of children forming the upper part of the school.

Infants' School. Class-rooms. Partitions. Babies' Room. Central Hall. – The class-rooms themselves should invariably be lighted from the left. I am a firm believer in plenty of window space for schools. I think the partitions between the various class-rooms should be movable, reach from floor to ceiling, and the three divisions made so as to roll into the space of one, and, of course, to consist wholly of wood and glass. In the centre partition there should be a large sheet of ground plate glass, blacked at back, for use as a blackboard. As a rule infants' schools are sadly deficient in blackboards. Care should be taken that these partitions should be well made, and that they are protected at the top by iron stays at each side, to prevent an accident through the falling of any part. Some years ago, I believe, an accident of this kind did take place in Scotland, and although it was, happily, unattended with serious results, one can easily see that the falling in of any part of the partition might have serious consequences. On the infants' floor there should be a good room to accommodate from 80 to 100 children specially arranged for babies. It should have a gallery and direct access not only to the central hall, but also into the playground, and the room should be in that part of the building nearest the offices for infants. Plenty of floor space should be left for games, and a possible swing. Figured glass should be inserted in the lower panes of all partitions, and at such a height as will enable the teachers to see over the top of same. In speaking of partitions I should explain that those between the central hall and the class-rooms ought, of course, to be stationary. All end rooms ought to be stepped for galleries. There is a difficulty in stepping rooms which are divided from each other entirely by wooden partitions, but wherever you have a wall it is well to have the back desks raised by means of steps or galleries.

One of the difficulties to be got over in a school planned as I have suggested is, of course, the lighting of the lower central hall, but I think it does not need very much ingenuity to get over this difficulty, seeing that the central hall is not, in an infants' school, used for reading, writing, and drawing. It is not essential, therefore, that it should be as well lighted as the class-rooms. There should be three fireplaces in each central hall, giving a warm and comfortable appearance. It would also brighten the appearance of the hall to put in the end windows some simple designs in colours which would not seriously obscure the light, and there is no doubt that the wall space at both ends of the hall may contribute very much to the pleasant appearance of the room if it is lined internally to dado height with figured tiles or glazed bricks having a suitable border in relief.

Cloak-rooms.—There should, of course, be ample cloak-room accommodation for the children. Iron fittings are, I think, preferable in cloak-rooms, and some arrangement ought to be made by which the cloak-rooms can be aired. A lavatory range containing three or four bowls should be provided in each cloak-room, and the floors to same formed of concrete, on account of the water being splashed over. Whilst speaking of lavatory ranges it is suggested that a sink with water tap similar to the one proposed for cookery kitchen be provided at each end of range of offices, to be used for drinking purposes and washing ink-pots.

Flooring.—The flooring throughout, except in corridors and cloak-rooms, ought to be of wooden blocks, and it is desirable to have in the central hall lines for children to march to, either painted on the floor or marked by sunk brass-headed nails. At one end of the central hall, if possible adjacent to one of the fireplaces, there should be a raised gallery on which may stand the head teacher's desk, with room for the piano, gong, &c. One of the end rooms on the ground floor may be conveniently used as a cookery room, which, however, does not require any elaborate fittings, the ordinary cottage slopstone accommodation being sufficient. A gas stove is, as a rule, used for demonstration lessons in large towns.

Staircases.—Proceeding now to the upper floor, I would like to remark in passing that there is a very great difference in the method in which school staircases are arranged. There should be a staircase at each end of the building, each communicating with an independent exit, and having independent access to the boys' and girls' playgrounds, it being a requirement of the Education Department that out of school the sexes must be rigidly divided. The simpler the staircases are the better. They should be of ample width, and lighted as efficiently as possible. Along each side there should be a hand-rail, not too high for the children to grasp. I think that staircases should be uniformly made of stone. Mezzanine floors are not recommended, as they generally interfere with the lighting of the staircase, and the accommodation afforded is not of much utility; if formed as teachers' rooms, they are too far away from the class-rooms for the teachers to have full supervision. In some cases these floors are utilised for w.c.'s, but it does not require much consideration to see that this is almost the worst use to which they could be put, for it is a difficult matter to prevent the air currents occasionally driving up the staircases, when they are positively offensive.

First Floor.– On the first floor we have the central hall, running from end to end with its open roof, and of course lighted from the top. The windows at each end of the hall may be made a feature; and here again there may be some leaded lights, though care should be taken to avoid inartistic combinations. In the case of a school belonging to a Board I think something of its municipal character should appear, and I would have inserted in the windows the armorial bearings of the town. Much art may be shown in the design of such windows. Heavy stone mullions are certainly objectionable. I have seen a very happy effect obtained by light wooden divisions, designed to represent a slight column, intersecting the divisions of large end windows to central halls. The same arrangement as on the ground floor will, of course, be followed as to class-rooms. It should be borne in mind in planning class-rooms that the width depends on the nature of the school furniture you intend to put into the room. A room furnished with dual desks should be wider than one furnished with long desks; and for dual desks a class-room for 60 children, at 10 square feet per child, should have dimensions approximating 24 × 25 feet. Although 60 is a suitable number for class-room accommodation, it is well to have some rooms which will accommodate 90 to 100 children. If possible these rooms should be constructed so that they may be divided into two class-rooms for 45 or 50 each. The movable partitions dividing the class-rooms throughout on this floor are, of course, useful when it is necessary to throw several classes into one for such purposes as combined lessons in singing, examinations, &c. If the central hall is attached to a mixed school, the Education Department require that there should be one group of desks for a class in the hall, and the hall is then reckoned for 60 in the accommodation. Central halls in infants' schools, or attached to separate departments for boys and girls, are not reckoned in the accommodation.

Teachers' Rooms.—Each floor should be provided with a private room for the principal teacher, and also with rooms for the assistant teachers, as in large towns many of the teaching staff are from force of circumstances unable to go home to their meals. In the case of a mixed staff of men and women there should be a suitable room for each sex.

Warming and Ventilating.—In speaking of warming and ventilating I know I am on dangerous ground, but I must say that my own opinion is in favour of open

fireplaces, which I think have obvious advantages over other methods. In connection with the fireplaces, 9-inch by 9-inch flues are frequently constructed, on account of there being an insufficiency of space in the walls for larger flues. These are often found to be inadequate, and the cause of considerable trouble, whereas 14-inch by 9-inch flues do not give the same trouble. There should be no angle in the flues which is less obtuse than 120 degrees, and no portion of the flue should be at a less angle than 60 degrees with the line of the horizon.

Every class-room and cloak-room should be provided with a ventilating flue, and each central hall should have at least three such outlets formed into the walls, except those on the top floor, where they can be taken by means of tubes from the ceilings. The ventilation of the class-rooms might be improved by means of glazed draughtless ventilators fixed in the lower portions of the window sashes. In Manchester it is not allowable to introduce any patent apparatus without the express consent of the Sites Committee of the Board. Hot and cold water supply should be laid on each floor.

Lighting.—I have already said that the main light should, as far as possible, be derived from the left of the scholars; but of course its quality and general distribution are as important as its direction. The windows should be large, and carried on the one hand as near as possible to the ceiling, and on the other hand well into the corners of the rooms where the desks are placed. It is desirable that the spaces between the windows should be smaller than the windows themselves. Dormer windows and top lights may be used for increasing the light, but should be sparingly resorted to, as they increase the difficulty of adequately warming the rooms. Ordinary sash windows should be used as far as possible, and care taken that their upper portions are capable of being easily opened. In arranging gas pendants for rooms it is well to follow, as a general rule, the arrangement of the windows.

Much valuable information on the subject of gas lighting may be obtained from a paper on the subject read by Mr. John West, C.E., before the Association of Mechanical Engineers on the 30th March 1895.

Offices.—These should be placed away from the main building, care being taken that they cannot be overlooked by neighbouring houses, though they should be well in view of those who control the school. A door should be provided to each division. The troughs should be of stoneware seated in wood, and have automatic flushing apparatus. No back-to-back offices should be allowed. Each range should have two entrances. Good ventilation is, of course, essential. The divisions should be so designed as to prevent children climbing up them, and so getting on the top. Height of seats should have some graduation, particularly for infants, varying, say, from 12 inches to 16 inches. In the boys' ranges urinals with slate divisions should be provided. The Rules of the Education Department contain the number of seats to be supplied to different kinds of schools. Effective and lock-up accommodation should be provided for the teachers.

Furniture.—Dual desks have their advantages and disadvantages. First of all as to cost. The duals are about twice the price of continuous desks. They are not so convenient for examinations, and of course they do not meet many of the requirements which are served by reversible desks. On the other hand there is no doubt that, particularly for girls' schoo's, there is a great advantage in having a rest fixed to the back of the desk. As to the question whether children in dual desks or in long desks are the easiest to instruct, teachers are divided in opinion. In addition to the blackboards placed in the class-room divisions there will also be a necessity for a number of movable blackboards, which are best when made to swing on substantially mounted frames. Some arrangement should also be made in each class-room by which maps may be hung in front of the classes. It is very seldom that we see a properly arranged museum in a school. We do frequently see cupboards with glass doors and shelves so high that their contents are almost out of view of the children. A museum, particularly for an infants' school, should not be much above dado height, and the glass should be brought down within the nearest possible distance of the floor. The wooden framing should be as light as possible. There should, of course, be a cupboard in each class-room for books, slates, &c., and a desk and seat for the class-teacher. The principal teachers should have well-made desks in which they can carefully preserve their registers and other records of the school. A good cutting out table is necessary for the teaching of needlework. I think that pitch pine is the most serviceable wood for school furniture. A piano has almost become an absolute necessity in girls' and infants' schools.

The kind of school that I have described could be easily increased in size. By having an upper storey on each side of the central hall the accommodation might thus be increased by thirty per cent., but as a rule schools of this size are not built.

Higher Grade Schools.—I would like to say a word or two with regard to the difference of arrangement in a building which is to be used as a higher grade school. In one which has actually been built, owing to the smallness of the site and the necessity for economy, the semi-basement is used for the chemical laboratory, the physical laboratory, manual instruction room, lecture theatre, and assembly hall or gymnasium. The first floor is for 500 boys and girls in the upper standards, and on the second floor there are rooms for Science, Art, and other advanced instruction. In such a school as this there may be instructed 500 children in the standards, with a like number in the Organised Science School. Of course a school of this kind is more expensive than an ordinary public elementary school, owing to the additional accommodation provided in laboratories, &c.; but I think the accommodation I have sketched out is ample for the purpose, and it might fairly be supplied at a cost of from £12 to £15 per head.

Economy of Cost in School Buildings.—It is becoming more and more a serious question, particularly with the large school boards, that the cost of erection of their schools should be reduced within the most reasonable limits. I do not mean, of course, in any sense that the schools should be imperfectly built. The materials and structure ought to be sound in every part. But undoubtedly a great deal of money may be expended on school buildings, particularly in outside ornament, which, considering the limits of any such expenditure, do not bear their money value. In Manchester there has undoubtedly been an attempt to carry out a type of school which some may think is planned on lines too severe. I grant that no attempt has been made to achieve any great architectural feature; but I think that a building suitable for the purpose, and certainly one which will not be a disgrace to any locality, may be erected in Manchester at a cost well within the limit laid down by the Board, viz. £9 per head. I would like to impress, if I may, very respectfully upon the profession the vital importance it is to the school boards that their buildings should be brought well within the estimates. It is no uncommon thing for a school board to have an annual expenditure on interest and repayment of loans of a sum nearly one-third its total income from the rates. And bearing in mind that these repayments are frequently spread over a period of fifty years, it will be seen that if the utmost care be not exercised a school board may easily pile up a great incubus of debt, which will for a long time be a serious burden upon the ratepayers. What we want are really substantially built schools, well equipped both as regards arrangements and fittings, with everything which is absolutely necessary for the instruction and healthy recreation of the pupils, and at the same time to avoid anything in the shape of unnecessary outlay and extravagant design.